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VOLUME XVI CHICAGO, JULY 1, 1909 NUMBER 1

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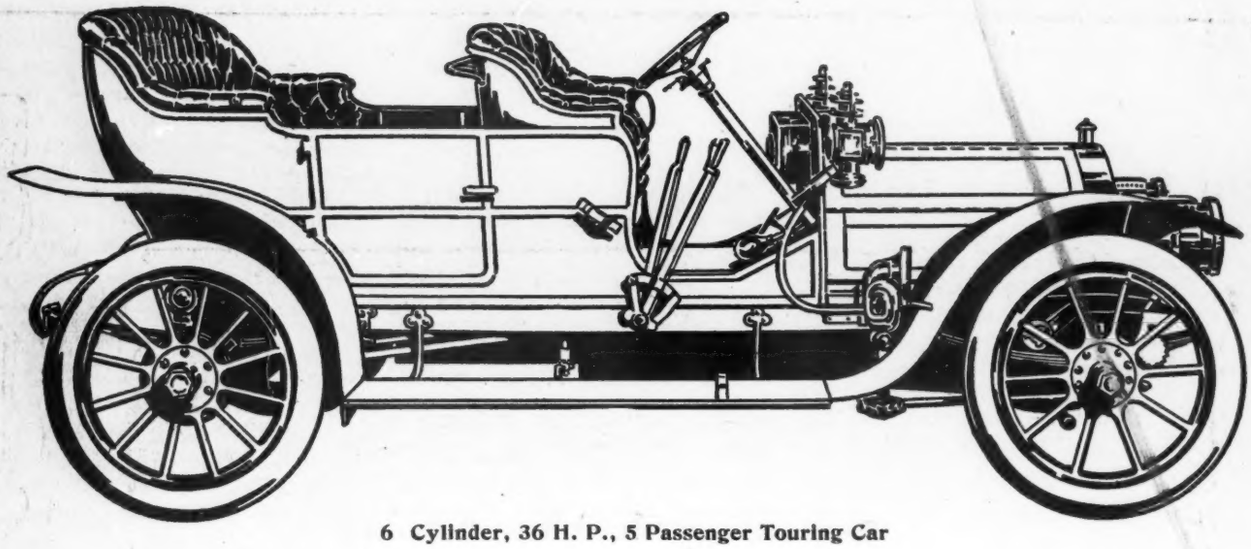

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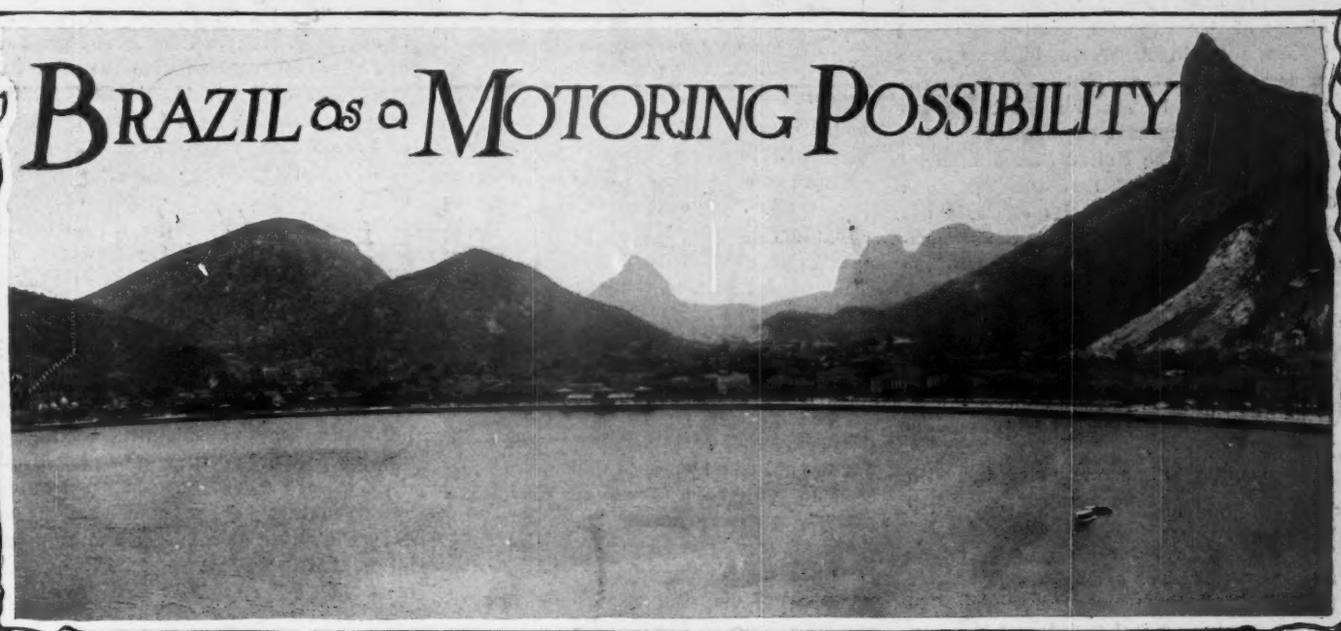
MOTOR AGE

BRAZIL as a MOTORING POSSIBILITY



RIO DE JANEIRO HARBOR BORDERED BY AN IDEAL MOTORING ROAD

By Sigmund Krausz

THE countries of the western hemisphere below the equator have until 2 or 3 years ago been a terra incognita for the American motor car manufacturer, and, as usual, he has permitted his European competitors to get the better of him by securing an earlier foothold. As to the advantage of being the first in the export field there can be no question, for Latin-American business is largely based on acquaintance and mutual confidence. It may be hard at first to acquire the latter, but once secured it is not easily shaken, and, if invariably treated right, a South American customer will stick to a manufacturer like a poor relation.

The American motor car manufacturer may justify himself in his own eyes by saying that his home business at a larger margin of profit does not warrant his paying attention to foreign markets, but in this the writer thinks he is essentially wrong. It is not far-seeing business policy. True, the exploitation of a foreign market costs time and money and does not offer great temptation when one can sell all one manufactures at the home door and with agents clamoring for more. Still, it is not sound business policy, and in this regard at least the European manufacturer, and for that matter the foreign maker in general, is ahead of us.

To prove its unsoundness one needs only to call attention to our business panic in the fall of 1907, when a number of motor car makers, who never had thought of it before, rushed pell-mell to secure an opening in the export markets. But foreign business is not secured so easily and a good many efforts proved vain. Fortunately the panic did not last and had but a slight effect on the American motor car business.

Should Be Far-Sighted

Now, had these same manufacturers in time of peace prepared for war, that is provided for an outlet in case of business depression, overproduction or sharp competition in the domestic field, there would have been no necessity of suddenly seeking foreign pastures without the necessary preliminaries and with the probability of failure in view. The writer knows it to be a fact that among the several American motor car manufacturers who, in the fall of 1907, decided to exploit the South American markets only one or two succeeded in establishing satisfactory relations, and these only because they had the good fortune to have able and thoroughly qualified representatives work for them. But even these successful firms are keeping up their new connections in a lukewarm fashion, because home business is rushing again. Can there be a greater mistake?

In this connection the writer claims that it is far better for a maker to devote a small fraction of his output exclusively to the foreign business, even at a smaller margin of profit, and thus keep a safety valve open all the time. This fraction, divided among the hundred or more domestic agencies which every large American concern has in the United States, cuts so little figure in the individual business of each agent that its effect on the domestic business would be infinitesimal, and the

EDITOR'S NOTE.—The following resume of motoring conditions in Brazil is by Sigmund Krausz, who recently spent 6 months investigating this territory for an American manufacturer.

outlet thus kept open is bound to prove a good thing in time of emergency. The initial expense of securing foreign business, too, while of importance at the beginning, is decreasing in proportion of its development and in the end should offer as good a margin of profit as the domestic business.

Business in Brazil

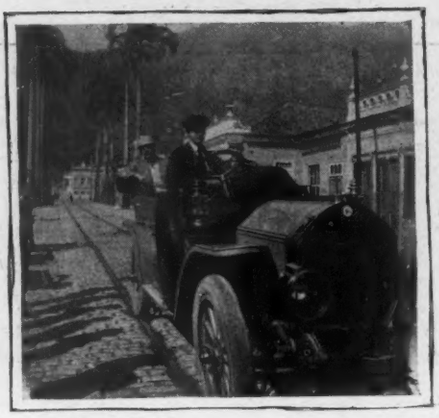
But it is of business in Brazil that this article is specially to treat and the writer will now endeavor to give as clear a picture of conditions and outlook in these countries as he tried to offer in a previous article on the motor business in Mexico.

At the time when the above-mentioned efforts of American manufacturers to get into the South American business were made and, in fact, at the time of this writing, conditions in Brazil are not any too prosperous to warrant expectations of big development. The United States financial panic of the fall of 1907 was felt to a considerable extent and its effect is not quite over yet. Added to this the economical conditions have been strained to the utmost on account of the political situation between Argentine and Brazil, which induced the latter republic to go to such heavy expense in trying to build up a powerful marine as is entirely incommensurate with its resources, at least for the present.

The country is immensely rich and with its area of more than that of the United States without Alaska, needs only the development of its natural wealth to become an important factor among the nations of the world. The government is trying to induce foreign capital to interest itself in this development, but official red tape and graft are frequently counteracting these efforts, and as far as the motor business is concerned there is enough of it to make it discouraging. The present population is 20,000,000, and its area 3,000,000 square miles. Rio de Janeiro, the capital, is 4,800 miles from New York, and nearer to Cape Town, South Africa.

Conditions in the custom house of Rio de Janeiro, the capital, are such that it takes sometimes as long as 3 and 4 weeks before you can clear a consignment, and that only with an infinite amount of cajoling the officials, unless you use the more

MOTORING IN PERNAMBUCO, BRAZIL



AVENUE OF PALMS, RIO DE JANEIRO

effective method of greasing. The duty on motor cars on paper is relatively a small one, it having been reduced from the prohibitive one of several years ago of 50 per cent to 7 per cent ad valorem with an obligatory consular invoice to attest to the real value. But what with an additional duty of 2 per cent the compulsory part payment of it in gold at an exchange arbitrarily fixed by the government, and various other fees and charges it really amounts to nearly 20 per cent ad valorem. This will include, though, the services of a despachando or custom house broker without the aid of which it is well nigh impossible to get even a sample car out of the alfandega, as the custom house is called.

Sample cars have always been treated in Brazil as regular imports, as there was no precedent of allowing them in under bond against deposit of the respective duty, and drawbacks for re-exporting cars were unknown. The writer, however, established such a precedent last summer by using influential letters of introduction and the local press, and interesting the Automobile Club of Rio de Janeiro to such an extent that at his departure from the city a strong movement was on foot to secure the admission under bond of sample cars of travelers and individual cars of bona fide tourists on a basis of procedure similar to that in France and other European countries. He has been informed since that such a bill has passed the Brazilian legislature and is now in effect.

In exporting motor cars to Brazil and in making calculations the packing of cars and the freight rates form a considerable item. The boxing should be done with extreme care in stout cases as the voyage of from 17 to 27 days is frequently a very rough one and the packages for Rio de Janeiro have to be transferred to the docks by lighters. Santos, through which port some cars are shipped designated for Sao Paulo, has a port deep enough for steamers to land goods directly on the docks, but the few cars arriving there can hardly be taken in consideration.

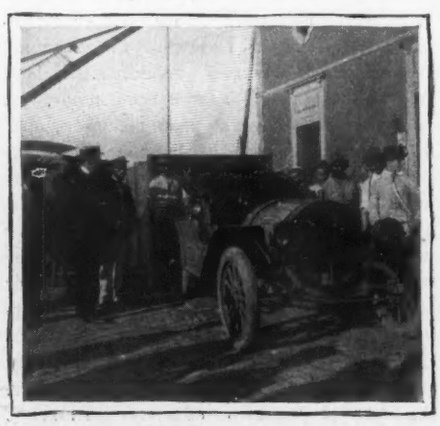
Existing Freight Rates

As to freight rates, those pertaining to Rio de Janeiro are, therefore, only of importance. They amount to 24 cents per cubic foot for cases up to 2 tons, with an additional charge for heavier packages. This cost includes lightering charges. The rates from New York are practically the same on all steamer lines and vary only on contracts for larger or smaller shipments. All freight charges have to be prepaid, the companies taking no chances of refusal of acceptance of shipments by consignees. The lines which may be principally considered in the transport of motor cars to Brazilian ports are the Lamport & Holt, the Hamburg-Suedamerikanische and the Lloyd Brazileiro, which, among them, maintain about a weekly service.

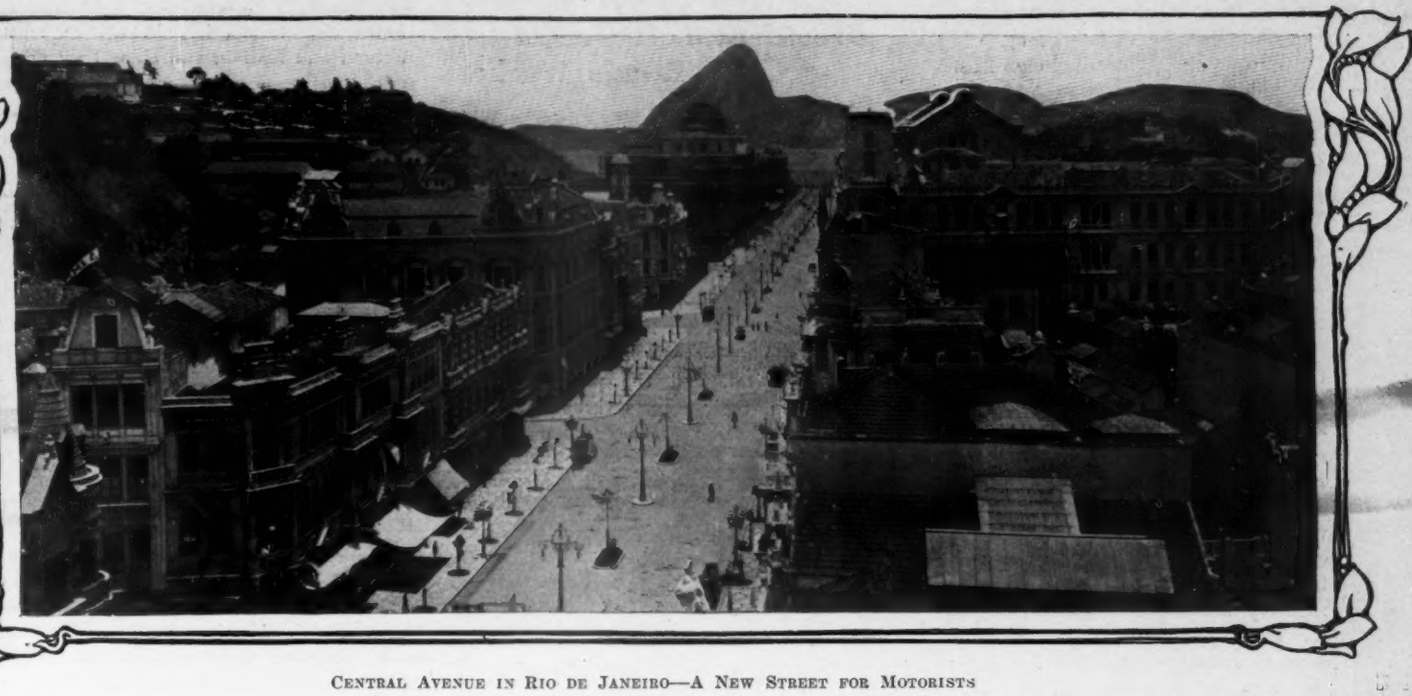
Freight rates from European ports are, if anything, cheaper than from New York, and this fact, coupled with the proverbial preference of Latin-Americans for everything French, accounts for the prevalence of French cars in the capital of Brazil, although most of the prominent makes of other European motor car manufacturing countries are represented in abundance. This does not mean to say, however, that all the cars met with on the streets of Rio de Janeiro are represented by agencies there. In fact, a large number is being imported by consumers directly in a way more advantageous to them than buying from agents. This consists of buying during a pleasure or business trip in Europe, which all well-to-do Brazilians periodically do, a motor car, using it somewhat abroad and then bringing it home as a second-hand car under a valuation less than half its real cost. Italy is but 16 days' voyage from Rio de Janeiro, and France and Germany are closer.

Agency Conditions in Rio de Janeiro

The agency conditions in Rio de Janeiro are insofar favorable that, up to now, agents are generally confining themselves to the handling of one or two makes only, thus being in a position to do themselves and the manufacturer represented justice. There is little likelihood that these conditions will change in the immediate future, as the market has been fairly gorged last season with motor cars and the dealers are shy of new propositions. With the approach of better times, however, of which the centennial exposition of Rio de Janeiro, held last fall and other signs, among them the clearing of the coffee situation, give



STREET SCENE, RIO DE JANEIRO



CENTRAL AVENUE IN RIO DE JANEIRO—A NEW STREET FOR MOTORISTS

indications, agents handling only one line of European cars should be found willing to add an American machine.

The American motor car, as everywhere in South America has, so far, been looked at askance in Rio de Janeiro, but the introduction, last season, of the Stoddard-Dayton and the White steamer has tended toward the removal of this prejudice and other American makes should be able to profit thereby. It will not do, though, to go there with an inferior machine, as the Brazilian likes not only a stylish and up-to-date body, but insists on power and hill-climbing qualities. The latter is of special importance in view of the fact that, aside from the restricted motoring facilities of the city itself, the only road offering a pleasant drive outside the urban limits is that of the Tijuca, a steep mountain climb of several miles which taxes the best car not only on account of the heavy grades, but also of the many sharp and dangerous curves. This road is always chosen as the test road for new makes of cars.

European Makes Represented

The European cars represented in Rio de Janeiro last season by agencies were the Dietrich-Lorraine, Clement-Bayard, Charon, Fiat, Berliet, Martini, Siddely, Thornycroft, Armstrong, and other important makes were handled by commissioners. Of American machines the Stoddard-Dayton, White steamer, Pope, Oldsmobile and Reo were handled by direct representatives with more or less favorable garage facilities. The latter can, in general, not be said to be bad, as far as roominess and equipment are concerned, but they are not in connection with salesrooms of which only the Dietrich-Lorraine and the Berliet, on the Avenida Central, the great thoroughfare of Rio de Janeiro, respectively, have one.

The garages have generally good private box accommodations, but they are not so cheap as in Mexico City and the price of gasoline, too, is almost prohibitive. A case, containing two cans of less than 5 gallons each, costs from 16 to 22 milreis, $7.26—the milreis is about 33 cents—according to where and in what quantity you buy it. The corresponding costliness of repairs, spare parts, accessories and other supplies also tends to retard the development of the motor business somewhat, but, fortunately for makers, the Brazilian is a spender and ostentatious into the bargain.

The federal and municipal governments, too, are good customers and most of the departments have purchased and are still purchasing expensive machines for the use of their officials and for the general service. To get this trade, however, does not so much depend on the merit of a machine as on the pull of the agent and his familiarity with the prevailing city methods.

There are somewhere between 700 and 900 cars of all descriptions in Rio de Janeiro, although the tag numbers run considerably over 1,000. This discrepancy is explained by the fact that the city is divided into more than ten districts and the first or first and second figure on the tag denotes simply the number of the district in which the machine is registered. Thus, for example, the writer's number 872 meant that he lived in the eighth district and possessed the seventy-second car registered therein.

STREET IN BAHIA, BRAZIL

Federal District Ordinances

The federal district ordinances provide for an owner's and chauffeur's license and there is considerable red tape connected with securing them, four documents being necessary before an owner can make use of his car. The cost of these papers figures up as follows:

Sixty-five milreis, $21.66, for motor license.

Sixty-five milreis, $21.66, for examination of motor car.

Twenty-three milreis, $11, for examination of chauffeur.

Twenty milreis, $6.66, for chauffeur's license.

The examination of a motor car consists as a rule in the raising of the hood by a city engineer and that of the driver by a short spin through a small park in front of the municipal building.

The cars owned in Rio de Janeiro vary considerably in style, but limousine and large touring bodies have the call and some very fine machines may be seen during the semi-weekly corsos on the Avenida Beira Mar. There used to be a large number of livery cars in service on the streets, but a police ordinance which has restricted their charges diminished the number considerably and, at present, only old and dilapidated vehicles stand for hire on the streets. Conspicuous among these are a number of runabouts of German make seating only one passenger. These are air-cooled with two diagonally-placed 6-horse

power motors without hood. The former charges were $4.95 for the first and $3.30 for the succeeding hours. Now they are $2.64 and $1.32 respectively, at which price the livery car owners claim not to be able to make a profit. They rent, however, at the old rates from the garages while waiting for a repeal of the obnoxious ordinance. When that is done away with there will be increased patronage from the residents who really like to motor.

Not Many Good Roads

As stated before, motoring, aside from the Tijuca drive, is confined to the city limits, and even there only the newly constructed avenues, such as the Avenida Central, Uruguayana, Beira Mar and the Rua Florian Peixotto afford real pleasure of driving. On the Rua Onvidor no wheeled vehicles of any nature are allowed—everybody walks. The Avenida Central is but 5 years old, being a new commercial roadway cut through the central part of the city. It is now well lined up with good permanent buildings. As to country roads there are none. There has lately been much talk of building a motor car road to Petropolis, the summer capital of the country, where nearly all diplomats, officials and wealthier citizens live during the months from November to May. If this plan were executed it would mean a considerable boom for the business, as this road would shorten the present time of rail and ferry communication between the two points about half. It would also mean the introduction of motor buses and sightseeing cars, as the road to Petropolis offers marvels of scenic beauty. At present there is only one motor bus circulating on the Avenida Central, and this is an innovation of last season. The novelty of it is greatly appreciated by the residents of the city, who give the bus good support.

No Trunk Roads

As to motor roads between the larger cities of Brazil they are not to be thought of for many years to come, at present not even railroad connection existing between them, except between Rio de Janeiro and Sao Paulo. The latter is, by the way, the only city in Brazil, aside from the capital, where cars are used to any extent and where the business exists in its regular form. In Bahia the writer has not seen one car, although some claim that several are owned there. But, according to the writer's observation, their owners, like those of the few cars he has seen in Pernambuco, must be possessed of more means than sense, judging from the condition of the streets in both places. Manaos, on the upper Amazon river, is said to have better streets, but, at best, the possibilities there, as well as in Para, are very limited, especially in view of the lack of good mechanics of which, not even in Rio there is a sufficiency. Chauffeurs and mechanics, both, are mostly French and Italian, and since they are often unscrupulous and always prejudiced against American machines the representatives of the American concern will always do well to secure their good will by liberal tips.

There is a motor club, the Club Automovil Brazileiro, with headquarters on the Avenida Beira Mar, in Rio de Janeiro. It has about 200 members belonging to the best class, some of which are privately interested in the promotion of several European cars. The clubhouse, however, is better fitted up for social purposes than for a sport organization. There is no garage connected with it, and the members come there principally for refreshments and to play a game of tennis. In its reading-room there is plenty of European motor car literature, but of American trade papers the writer has only seen Motor Age and Automobile. A prominent member, Count de Almeida, is the leader of the real motor element and interests himself actively in promoting the sport and, since he is editor of one of the foremost dailies of the capital, he supports enthusiastically the move for the building of a road to Petropolis, and according to his assertion the project stands a good chance of realization in the very near future.

The tire business is controlled almost exclusively by the French and German manufacturers, only one Italian firm being represented in the field, but with the excellent goods made now in the United States there is no reason why this branch of the industry could not be pushing ahead as well as the principal one. It is certain that since the visit of the American fleet in Brazilian waters and the advent of Secretary Root in South America there is a friendlier feeling for commercial intercourse between the two nations, and the former prejudice against Yankee goods is fast disappearing. What was said in the article on Mexico about the accessory business and motor cycles holds good for Brazil too.

Summing Up the Situation.

Summing up the situation, the writer would say that, although the outlook for American cars in Brazil is, at the present time, not very encouraging, the same applies to motor cars in general but this should not prevent American manufacturers from watching the market. The country has a splendid chance for development and with the settling of disturbing political and economical questions, the return of prosperous times is bound to bring in its wake a revival of the good motor car business which 2 or 3 years ago gave the European makers the chance of a strong foothold which our manufacturers failed to grasp. It is recommended that American manufacturers, if they really care for foreign business, study up on the possibilities in South America, with a view to going after trade there when the home demand is caught up with.

President Taft Greets Good Roads Workers

Washington, D. C., June 25—The White steamer and Oldsmobile cars, representing, respectively, the New York Herald and the Atlanta Journal, which are blazing a route for the proposed endurance contest from New York to Atlanta next fall, arrived in Washington on Wednesday and met with a most cordial reception. Several cars went down into Virginia to meet the scouts and escort them into the national capital, and the passage of the scouts and their escorts through the city was the occasion for a great outpouring of people.

Arriving at noon, the two scouting parties quickly divested themselves of their dust-covered clothes and then were taken to the White House, where they were greeted by President Taft. He was most cordial in his greeting and quickly assented to the request that he pose with the party in front of the executive mansion. President Taft has given deserved recognition to the motor car in more ways than one. He commended the good roads project these two scouting parties are working on and concluded his interview with them by wishing them the best of luck in their work for good roads.

After leaving the president the tourists were taken to the New Willard, where an elaborate luncheon was served, which was attended by leading citizens and government officials. Following this was a good roads meeting. "Pull for good roads" was the slogan of the meeting and it was emblazoned on the wall in big letters.

Splendid good roads speeches were made by District Commissioner West, W. F Gude and C. H. Rudolph, presidents, respectively, of the chamber of commerce and the board of trade. W. W. Finley, president of the Southern railway, and a number of others, including Hamilton Peltz and Jack Cohen, the two chief scouts.

The day's festivities were brought to a close with a reception tendered the scouts by the Automobile Club of Washington at its country home. The reception was attended by hundreds of motorists and the scouting parties received a great ovation. Escorted by a dozen machines they left the city next morning with Baltimore as their destination. The escorting machines went as far as the Monumental City with them.

Aggregation of Stars In Denver Road Races

Denver, Colo., June 26—There promises to be an aggregation of stars in the Denver Motor Club road race over the Brighton course on Monday, July 5. Two Vanderbilt cup contestants and the winner of the Indiana trophy at the Crown Point-Lowell races will be in the free-for-all, as will also the Moon, which was driven by Phil Wells, of St. Louis. It has not yet been definitely decided whether Wells or Harold Brinker will be at the wheel of the Moon.

There will be two Chalmers-Detroit Bluebirds in the race. Joe Matson will drive one and Billy Knipper the other. The 45-horsepower Colburn racing car and a 30-horsepower stock car will be in the race. Bert Colburn will drive one and the other driver has not yet been announced.

The Marmon entry, which is No. 1, was the first car to be stripped and put over the course. W. M. Johnston, owner of the Marmon, has established training quarters on the Buckeye farm near the starting point, and Driver Morris C. Martin and Mechanician Charles D. Martin gave the car its initial tryout Saturday.

The county commissioners have had a gang of men busy all week and the course is undergoing many improvements. The bridge on the Hazletine leg of the course has been straightened and the winding curves on the Barr road have been ironed out straight so that fast work may be accomplishd on this 7-mile straightaway. There is a hairpin turn at the Barr-Hazeltine road junction, but the approach has been widened and the telegraph poles removed so that the turn may be made safely.

Three telephone stations will be established, one at the hairpin, one at the turn onto the Brighton road and one at the finish. Flagmen will be stationed at various points along the course, and these will assist the sheriff and his deputies in patrolling the road.

The race will start promptly at 9 o'clock at the scoreboard about a quarter of a mile north of the Model road house, the first turn being directly in front of the Model. Then comes a straightaway of 7 miles over the Barr road, then the hairpin turn on to the Hazeltine road, which is a 2-mile straightaway, and then the left turn on to the Brighton road, with a 5-mile straightaway to the finish. The free-for-all race will be twenty laps over this course, and the light car race will be fourteen laps.

SIGNBOARDING COMPULSORY

St. Louis, Mo., June 29—George Lang, Jr., Missouri correspondent of the good roads bureau of the United States agricultural department, who has his headquarters in this city, has just called attention to motorists of the state to a law on the statute books which provides that there shall be sign boards at the intersection of all public highways, the expense to be paid by the state. This discovery has elated members of the Automobile Club of St. Louis, who have been placing signs throughout territory contiguous to the city at their own expense. The existence of the law was called to Mr. Lang's attention by a letter addressed to him from the Automobile Club of St. Joseph. The law reads: "Every overseer shall erect and keep a post at every forks or crossroads, in his district, that would likely mislead, to which shall be affixed a finger board containing a legible inscription, directing the way and noting the distance to the next important place on the road, for which he shall be allowed not more than $1. And it shall be the duty of every road overseer to keep all roads in his district clear of all obstructions and cause to be cut down and removed, between July 15 and August 15 of each year, all weeds or other obstructions calculated to impede or interrupt travel thereon." Section 9670 of the same article imposes a fine on the road overseer failing to comply with this law of from $5 to $20. Missouri is noted for the absence of signboards on its highways. This is especially true in those districts where there is most liklihood of travelers becoming lost. The St. Louis club is preparing an agitation which it intends shall be state-wide, with a view of having this law enforced.

ROAD PLUM FOR CLEVELAND

Cleveland, O., June 28—Cleveland is planning a great welcome for the good roads convention of the American Automobile Association, that meets in this city September 21-22-23. Close to $12,000 is to be spent by the state in constructing sample roads, while the Cleveland Automobile Club and chamber of commerce are laying plans to give the delegates a royal welcome. Some time ago the legislature of Ohio appropriated $12,000 for experimenting with various kinds of road surfaces. Inasmuch as all who will attend the coming convention are interested in this one thing above all else, the state has decided to spend the major portion of this for building five ¼-mile sample roads, to be inspected by the visitors. In addition to this a number of manufacturers will also build sample roads for the consideration of the visitors, as was done at Buffalo last year. The Cleveland chamber of commerce has donated the use of its assembly hall and auditorium for the use of the convention.

Fast Fields Entered In Santa Monica Races

Los Angeles, Cal., June 25—A glance over the entries for the Santa Monica road race to be held near Los Angeles July 10 shows good fields in the two events which are being promoted by the Automobile Dealers Association of Southern California. Dick Ferris is giving a $1,000 cup for the heavy-car race and Leon Shettler a $500 trophy for the light-car event. Each race will be 202 miles, or twenty-four times around an 8.4-mile course. This road has been thoroughly worked and oiled and will be in perfect shape when the cars begin their try-outs July 1. Already a speed of 76 miles an hour has been made over the course and it is being freely predicted that the average time in the big car race will be close to the 60-mile mark. Work will be started this week on a 6,000-seating capacity grand stand. This stand will face the Pacific ocean along a stretch of road over which the cars will be making their fastest time. The complete list of entries follows:

HEAVY-CAR RACE

No.	Car	H. P.	Driver
1	Apperson	55	H. Hanshue
2	Stoddard-Dayton	60	Siefert
3	Franklin	42	Hamlin
4	Chalmers	40	Dingley
5	Studebaker	40	Lord
6	Rambler	45	Harvey
7	Premier	30	Bradbeer
8	Lozier	45	Tettsleff
9	Columbia	29	Stone
10	Pope-Hartford	40	Ruess
11	Stearns	60	
12	Haynes	36	Shannon
14	Locomobile	40	Page
15	Thomas	70	Salling
16	Chadwick	60	Kittle

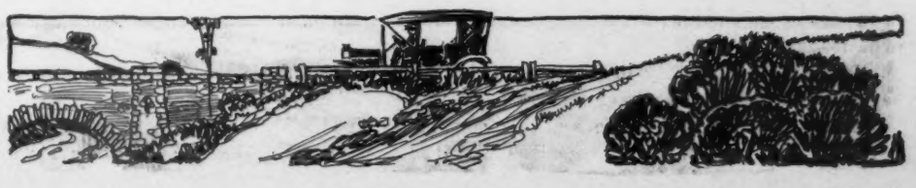
SMALL-CAR RACE

No.	Car	H. P.	Driver
1	Cadillac	30	Patee
2	Stoddard-Dayton	25	Siefert
3	Maxwell	30	Smith
4	Chalmers	30	Dingley
5	Studebaker	30	Lord
6	Regal	30	Hager
7	Durocar	26	McKeague
8	Mitchell	20	Greer
9	Buick	20	Nikrent

California already has had several interesting road races this year and is hungering for more of the same sort.

PREPARE FOR GLIDDENITES

Sioux City, Ia., June 28—The Sioux City Automobile Club, of Sioux City, Iowa, has appointed committees to arrange with farmers along the route of the Glidden tour in that section to have the bad places in the roads repaired and the highways dragged. The city council has been taken on an inspection tour and the result will be that the road between Sioux City and Le Mars will be put in shape for the tourists. The club is seeking a membership of 100, being desirous of becoming the strongest and largest organization in the state.



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Carbureter Manufacture —— Popularity of Four-Cylinders

NO DEPARTMENT of the motor car accessory field is showing greater enthusiasm at the present time than the manufacturers of carbureters. A few years ago it was predicted that stock-made carbureters would gradually give way to special types built by the car manufacturers and supposed to be suitably adapted to the needs of their particular engine. It is not much of a task of memory to recall the days when certain car manufacturers refused to allow anything but their own make of carbureters to be fitted, but now not a few concerns, who started out with their own special design, have climbed into the band wagon and are fitting one type or another of carbureter made in one of the carbureter factories. This bears out the old adage that "every man should be heard in his own department," and in this respect the carbureter engineers have been devoting much time for the perfection of their devices, as well as to a careful study of the carbureter problem in general. With carbureter engineers the problem has not always been one of economy of fuel, for, while one engineer has been devoting every energy to reduce fuel consumption, another has been bending every effort to bring out a carbureter that will give the greatest possible speed. The engineer whose aim has been economy has frequently not produced the fastest carbureter, but has obtained commendable flexibility, so that within a given range of speed the most delicate control with good economy has been accomplished. Carbureter designers are practically agreed that on high speed it is impossible to economize fuel, and that for racing purposes the only object is speed, irrespective of the number of miles per gallon that is obtained. It is regrettable that the problem of efficiency does not enter in to a limited extent into high-speed contests, because practically all contestants agree that much gasoline is wasted in such trials. In America, where gasoline is cheap, this is not a factor, but in Europe it has received attention and is still the subject of much experimentation. In America it will come, and whether or not fuel economy would figure as a factor in determining the winner the accurate measurement of the fuel in such an event as a road race would produce valuable information on the subject of carburation and fuel economy. Maybe some road-race promoter will recognize this in the future and make provision for it.

SLOWLY but surely the four-cylinder type of motor is superceding the two-cylinder and the single-cylinder in the low and medium-priced car field. Already two leading manufacturers have announced that they will market for next year low-priced four-cylinder cars, which will practically mean the discontinuing in large quantities of their two-cylinder types. The advent of the cheap four-cylinder car and its usurpation in many circles of the two-cylinder field is not due to any defects in two-cylinder construction, but has been done in answer to the public demand for a four-cylinder motor. The days when universal talk throughout America was for the two-cylinder small car is now waning, the public which buys having been the judge to decide on the type of car that it wants. This verdict of the American public is in strong contrast with the public spirit of 5 years ago, when even manufacturers of big cars found it difficult to convince the public of the desirability of a four-cylinder machine. In those days the public argued complexity and delayed the adoption of the four-cylinder car, but, today, this complexity argument is never mooted, but instead the flexibility of the four-cylinder is talked of everywhere. This is one more example of the fickleness of the great buying public and should impress on the manufacturer that "right is might," and that it is not always wise to give the public exactly what it demands. One or two manufacturers who have pinned their faith solely to the single and two-cylinder cars, because of the public demands, have had to change, using more cylinders. As to whether this desire for more cylinders will cease with the four or not is a problem that only time can definitely answer. With flexibility as the great object to be gained, there is a certainty that the six will in a few years have a big following. Flexibility means ease on tires, as well as ease on car parts, which means longer life to the car and lower maintenance and expense, a goal at which designers long have been aiming and with considerable success.

THROUGH the efforts of the motorists touring conditions in the United States are gradually improving and in another decade the highways of this country will begin to show the effects of this missionary work. The activity of the motorists is not confined to spreading the good roads gospel among the farmers, but it is developing into even more practical channels—the motorists are taking up the burden themselves and are demonstrating they are willing to practice what they preach. The public is familiar with the sign-boarding campaign that is so successfully being carried on from coast to coast, but it has remained for the Middleboro Automobile Club, of Middleboro, Mass., to introduce a novelty that ought to score a bull's-eye. Members of the club realize that one of the greatest dangers on the public highway is a corner where dense shrubbery exists, hiding a view of the road. Therefore, they are purchasing property in their vicinity where such dangers lurk and are cutting down trees that might possibly obscure the vision of motorists or others who are using the highways. This is a most commendable act on the part of the Middleboro owners and it is in keeping with the efforts of the motorists to educate the people as to what should be done to make the highways of the country safer than they are at present.

WHEN such an experienced forecaster as Alfred Reeves, general manager of the American Motor Car Manufacturers' Association, optimistically declares there will be an increase of 125 per cent in the production of American motor cars in 1910 over 1909, his opinion is worthy of consideration. Such an increase means the manufacture of at least 200,000 cars. That Mr. Reeves' figures are worthy of credence goes without saying. It is not boom talk on his part, for at the present time the American industry is not in need of booming, as is shown by a review of this year's business. It is known to all that the American makers could not begin to supply the enormous demand in 1909 and it would look as if a jump from 75,000 to 200,000 is not at all beyond reason. The motor car is here to stay and the American people realize it; therefore it is reasonable to suppose that the car manufacturers will do everything they can to give the people what they want. There should not be any fear of an overproduction for another year at least, for as Mr. Reeves sagely remarks, the parts maker is a most effective safety valve and will keep the car manufacturer from building air castles in Spain. If the car maker cannot get enough parts with which to build all the machines he has started out to manufacture, necessarily there will be a check on his enthusiasm.

BEAUTIES OF THE TRIP TO COLORADO SPRINGS

Famous Run Out of Denver Appeals to Many Motorists of the Colorado Metropolis

DENVER, COLO., June 25—The most popular drive out of Denver for all motorists and the one which every purchaser of a new car takes as soon as he gets enough confidence to venture beyond the city limits, is to Colorado Springs. Denver folk rarely refer to the city at the foot of Pike's peak by its full name. They say they are going to the Springs, and everybody knows that means Colorado Springs.

The distance from Denver to Colorado Springs by highway is 70.9 miles. This distance is exactly and properly given, for there are two certain points to figure from. All journeys from Denver start at the Denver Motor Club, and they always stop at the Antlers hotel—the magnificent hostelry of which Colorado is justly proud. Aspirants for the record from Denver to Colorado Springs—and that means everybody who owns a car in Denver, and who either openly or secretly tries to clip a minute or so from the official record—goes over the mileage above set forth, the checking in point being in front of the Zebulon Pike statue which guards the portals of the Antlers.

This little journey is a sight-seeing trip all the way, and the tourist who is fortunate enough to go over this route will find something to interest him from the beginning to the end. Just as he prepares to start from the Denver Motor Club he can look over his shoulder and see the United States mint, half a block away, in which there is at present stored over $400,000,000 in gold—the largest amount of bullion ever gathered together in the history of the country. Denver is just now the treasure house of the nation, and the motorist on his way to the Springs need not worry about his hotel bills in little Lunnon, provided he can conduct the proper negotiations with Uncle Sam.

The new $450,000 public library is directly across the street from the Denver Motor Club, and before the car is fairly started down Colfax avenue the state capitol is in plain view. This magnificent structure you are told cost nearly $4,000,000, is built of Colorado marble, and is genuine all through. The taxpayers think it is worth the money—and that doesn't always apply to public buildings. The native son of Colorado invariably calls the attention of the tourist to the sheen of yellow on the capitol dome and tells him there is $5,000 worth of gold leaf there— and it, too, was dug from Colorado mines. The native son is a great booster for home products.

Speeding down Broadway, just slow enough to keep Bill Bosworth, the motor policeman, in a good humor, the motor car turns on Mexico avenue and passes to the left of Overland park, which has been the scene of many a stirring horse race in days gone by, but is being converted into a staid and sober state fair ground in order to keep within the pale of the law. The road to Littleton, 10 miles away, may be likened to a race course or an ideal French highway, and it's a slow car that doesn't turn into the main street of the little town in ½ hour. The same good road continues, and 3 miles farther comes Wolhurst, the summer home of Thomas Walsh. This is a ranch of some 500 acres and is said to be the finest ranch in the state.

All this time, while the driver has been opening the throttle just a little more, the passengers have been looking at the Rocky mountains, 50 miles away, taking full advantage here of what the real estate dealers of Denver say in their pamphlets and advertisements—"200 miles of uninterrupted view of the Rocky mountains."

The road winds along, up and down some slight grades, across mountain streams—mostly dry—through the little village of Sedalia, where a livery stable has a sign "corral" to give it the true western flavor, and then on the same good road until the speedometer registers 32 miles. Here is Red hill—"the stiffest grade between Denver and the Springs," says Louis, the driver, as he steers the Studebaker up to the top without shifting a gear or apparently noticing there is a grade in the neighborhood.

Palmer lake is 48 miles out of Denver, and the hour hand has not yet reached the third figure on the dial. The lake isn't much of a lake, viewed from a Minnesota standpoint, but it is picturesque, and with the many handsome bungalows and cottages of the summer residents perched on the mountainside above, it is a pretty picture.

Fifteen miles farther is Pike's View, and from this little village one gets all the name signifies—a look square in the face of Pike's peak. The peak is 20 miles away, but it looks to be only a mile or so. The snow-clad summit glistens in the sun, and the eastern visitor feels some of the awe and admiration which this great mountain inspires, and which grows upon him the more he sees of it.

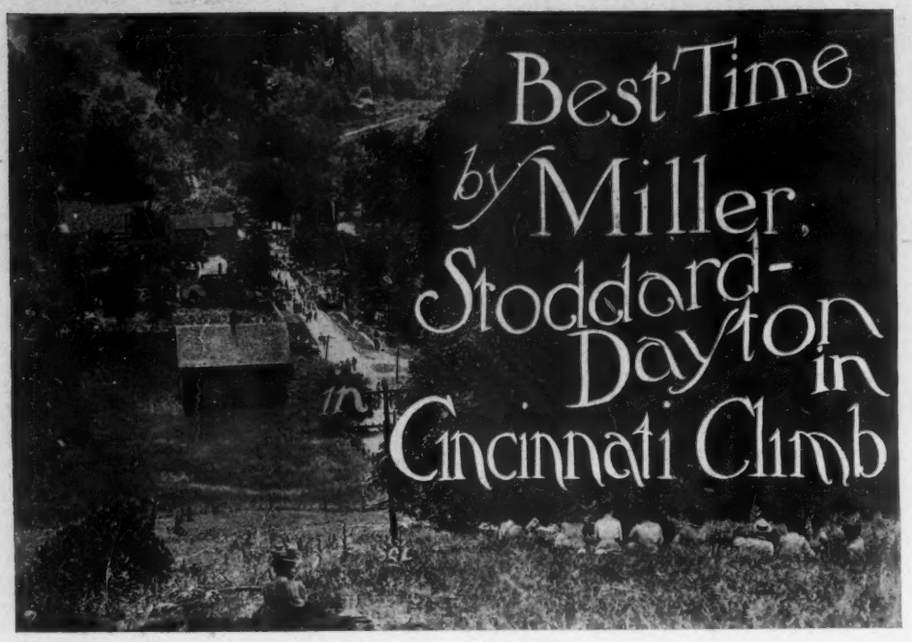
From Pike's View to the Springs the good road transforms itself into a boulevard, thanks to the efforts of the Colorado Springs Automobile Club, which has put in a great deal of work in having the road straightened and widened. The car rolls over the railroad bridge—or more properly speaking, over the bridge over the railroad—on to Cascade avenue, a roadway 200 feet in width, with a grass parkway down the middle and costly homes on each side.

At the head of Pike's Peak avenue stands the Antlers, and as Louis turns the car into the driveway behind the giant statue of the discoverer of the peak, the clock on the dashboard registers 3 hours 30 minutes, with Denver 70 miles away.

Ford Gets Decision

Seattle, Wash., June 29—Following the finish of the New York-Seattle race, which finished last Wednesday, the No. 2 Ford, drawn by B. W. Scott, was protested by the driver of the Shawmut, which finished second, 17 hours later. This protest was settled today by Referee Guggenheim, who refused to allow it. The principal charges against the Ford are that the two Ford cars were allowed to cross a railroad bridge by special permit, while the Shawmut was refused access to the bridge; that the Ford No. 2 broke the rules regarding the actual driving by allowing an employe of the Ford branch in Seattle to get into the driver's seat and operate the car; that the Ford No. 2 arrived in Seattle with a new axle, one that had not been stamped in New York city. Ford No. 1 finished third on Friday, but it had disqualified itself by changing a rear axle. The Acme came in this afternoon, having finished in the hope of profiting by a possible disqualification of Ford No. 2.

Scott and Smith driving the Ford car No. 2 passed through the main gate at the exposition grounds at 12:56 p. m. June 23. The winning car covered the ocean-to-ocean course from New York to Seattle in 22 days 56 minutes, 3 days of which were spent at control stations. With their faces covered with the dust of travel and their car bearing the marks of the hard knocks it had received in the great test of endurance, Scott and Smith smiled their acknowledgment of the cheers of the thousands of people who had gathered along the streets to see the winning cars pass the goal. On First avenue south the 150 cars who accompanied the racer were met by the first assistant chief of the fire department driving the car of the fire department, who took the lead and piloted the Ford to the exposition grounds. Behind the patrol followed M. Robert Guggenheim and W. A. Walker, his secretary. Following the donor of the trophy came the winning car, while in their wake were R. P. Rice, manager of the local Ford branch, and Henry Ford, president of the Ford Motor Co., and his son. When Mr. Guggenheim, referee of the race, reached the gate, he jumped out and ran to the gate and took the time of the finish when the winner broke the tape. Entering the grounds the car proceeded to the stadium, where it completed five exhibition laps.



GENERAL VIEW OF CINCINNATI HILL FROM HALFWAY UP

CINCINNATI, O., June 26—With more than 25,000 cheering spectators excitedly shouting words of encouragement, Bert Miller, in a Stoddard-Dayton, entered by the Herchede Motor Co., of this city, finished the Ft. Anchient hill-climb this afternoon in 1 minute and 11⅕ seconds. The fact that the hill is one of the steepest and most dangerous in the state and slightly less than a mile in length, with a quarter of a mile straightaway, the time made was remarkable. Miller's performance was the feature of the day. He deserved to win as he exhibited a wonderful control over his car, keeping it well in the center of the road with no seeming danger to the crowd which was strung along the pike from the beginning of the hill. Miller's work proved the best of the day, though good time was made in several other events.

No accident of a serious nature marred the series of events and throughout the hill-climb reflected great credit upon the officials of the Automobile Club of Cincinnati, under whose auspices it was given.

The splendid time made in nearly every event indicates that the heavy rains overnight, the day being particularly sultry, had not damaged the course. The failure of several of the big cars to go the route in the free-for-all class, which was expected to be the liveliest of the day's contests, proved a disappointment to many. Walter Donnelly, in a Packard, had tire trouble and Miller's Stoddard-Dayton also failed to run to form. One of the most popular wins was that of E. A. Conkling, of Avondale, Cincinnati, driving his own car in the club members' cup race, finishing in 1:29⅖. H. G. Pounsford finished second and F. H. Miller third. An odd fact developed, that all the cars in the class were Stevens-Duryeas.

The free-for-all went to an Oakland roadster driven by Bower. He finished the course in 1:17⅕. A. G. Eggers' entry came in second and Ed Jungclas third. The first race, for cars costing $850 and under, went to a Hupmobile. The second event was taken by an E-M-F. An Oakland captured the third class, for cars costing $1,250 up to $2,000.

Although the climbs were started at 11 o'clock in the forenoon it was a few minutes after 3 oclock in the afternoon before the last event was finished. Those drivers whose cars had met with accidents were given permission to run exhibition miles after the regular events, but the crowds had become impatient and overrunning the course made this feature impossible, and the day's sport was declared to be at an end, a huge success in every way.

President C. L. Bonifield, of the Automobile Club of Cincinnati, under whose auspices the climb was held, was in an especially happy state of mind because of the great interest taken in the hill-climb and the remarkable total attendance, estimated at 25,000, taking in consideration that the thirtieth national meeting of Turners at Cincinnati with 5,000 athletes on the program for the day's events at the Carthage Festplatz was a counter attraction of undoubted strength with the sport-loving citizens of the city of Cincinnati and vicinity. A fact that assisted in making the attendance particularly large under the circumstances was the attendaince from Hamilton, Dayton, Springfield, Columbus and Cleveland, O., and Louisville, Covington and Newport, Ky. It had been freely predicted that the distance of Ft. Anchient hill, 41 miles by rail from Cincinnati, alone would deter many from attending. Fully 300 cars were parked at the top of the hill and at the foot.

MERIDEN HILL-CLIMB RESULTS

Meriden, Conn., June 26—Burton C. Rogers, driving a Corbin, carried off the high honors in the first annual hill-climb of the Meriden Automobile Association on Ives hill in South Meriden this afternoon.

RESULTS IN HILL-CLIMB OF CINCINNATI AUTOMOBILE CLUB

Name of Car	Driver	Type	H. P.	Cyl. Bore	Piston Stroke	Time
EVENT A—Stock Cars Selling for $850 or Less						
Hupmobile	W. M. Carroll	Runabout	16.9	3¼	3⅜	*2:22⅜
Schacht	C. Dietz	Runabout	15	4¾	4	†2:24⅕
Maxwell	Kilpatrick	Runabout		4½	4	2:51⅕
* PROTEST account lack of cushions; first time 2:20 flat						
† PROTEST account of back mud guards, time given is first made—did not run again						
EVENT B—Stock Cars Selling from $851 to $1250						
E-M-F	Sid Black	Roadster				1:43⅕
Buick No. 10	G. DeWitt	Roadster	22.5	3¾	3¾	1:45⅕
EVENT C—Stock Cars Selling from $1250 to $2000						
Oakland	H. A. Bower	Runabout	40	4½	5	1:22
Buick No. 17	P. D. Wilson	Touring	32.4	4½	5	1:29⅖
Buick No. 17	W. G. Welbon	Touring	32.4	4½	5	1:42⅖
Buick No. 17	G. DeWitt	Touring	32.4	4½	5	1:45⅕
EVENT D—Stock Cars Selling from $2001 to $3000						
Stoddard-Dayton	Wright	Roadster	36			1:19⅖
Stoddard-Dayton	Anderson	Roadster	45	4¾	5	1:46
EVENT E—Stock Cars Selling from $3001 to $4000						
Stoddard-Dayton	Albert Miller	Roadster	44	5¼	5¾	1:11⅕
Palmer & Singer	Jungdas	Roadster	60	4¾	5½	1:31⅕
Stevens-Duryea	C. A. Ratcliff	Roadster	35	3⅞	4¾	1:34
Stevens-Duryea	W. Duttenhofer	Roadster	36	3⅞	4¾	1:38⅖
EVENT G—For Club Members Only, Owner Driver						
Stevens-Duryea	Conklin	Roadster	36	3⅞	4¾	1:29⅖
Stevens-Duryea	Pounsford	Roadster	35	3⅞	4¾	1:29⅖
Stevens-Duryea	F. H. Miller	Roadster	54.1	4¾	4½	1:36⅖
EVENT X—Free-for-All						
Oakland	Bowers	Runabout	40	4½	5	1:17⅕
Stearns	Roehme	Touring	46	5⅜	5⅞	*1:20⅘
Palmer & Singer	Jungdas	Roadster	60	4¾	5½	†1:31
Stoddard-Dayton	A. Miller	Roadster	44	5¼	5¾	1:32⅖
Stevens-Duryea	W. Duttenhofer	Roadster	36	3⅞	4¾	1:33
Packard, Model 1907	Donnelly	Roadster	30	5	5½	‡

* Stripped † Fully equipped ‡ No time taken

The course was in good condition and a large crowd turned out despite the heat to witness the contest, which was well conducted. The grade is of ½ mile and not difficult. Company L of the Second Infantry Connecticut National Guard patrolled the course and did good service. The contest was limited strictly to Meriden owners.

Event 3 was for cars of piston displacement of 160 cubic inches and under. Three Maxwells were started, Charles Smart proving the winner in 1:13 flat. Robert Merriam was second in 2:04¾ and L. F. Wheatley third in 2:10½.

The next event for cars of piston displacement of 161 to 230 cubic inches was a shade faster. Adam Englehardt in a Ford captured the cup with ease, winning handily in 1:10½. Another Ford, driven by A. E. Cook, was second in 1:20½, and Earle, Ford, was third in 1:21¼. It was clearly a Ford event.

The car record of the course was established by Burton C. Rogers, driving a Corbin in the class for cars of a piston displacement of 231 to 300 cubic inches. Rogers won by a wide margin in :45¼, followed by C. A. Terrell in the Pope-Hartford in :51½. B. L. Lewton in a Corbin was third in :59 flat.

In the event for cars having a piston displacement of 301 to 400 cubic inches, the Chalmers-Detroits came into their own. Percy Collington tore up the stretch in :47½, with Eichorn pushing him hard in :49½. Englehardt was third in the Ford in :51½.

The free-for-all brought out the largest number of starters, fourteen cars crossing the tape. Rogers in the Corbin, with his previous good time as an incentive, flew up the stretch in an endeavor to better his former mark. However, he was ¾ second slower, but captured the second cup of classes in which he competed. In this, the last event, the time of the eight best cars was well under the minute mark, so that in this class the best and most consistent performance was afforded. Terrell in the Pope-Hartford made the hill in :52 flat, Eichorn in the Chalmers-Detroit was ¾ second slower. Cuno in a Merkel made it in :54½ and Lawton in the Corbin lowered his former time by four seconds, making the course in :55 flat.

MILLER IN STODDARD-DAYTON AT THE FINISH LINE AT CINCINNATI

In the motor cycle events Warren Watrous on an Indian won the single-cylinder class in 1:09, and in the double-cylinder division Allaire on an Indian won in :40½. Summary:

Piston displacement of 160 cubic inches and under:

Car	Driver	Time
Maxwell	Smart	1:13
Maxwell	Merriam	2:04¾
Maxwell	Wheatley	2:10½

Piston displacement 161 to 230 cubic inches:

Ford	Englehardt	1:10½
Ford	Cook	1:20½
Ford	Earle	1:21¼
Buick	Bloxham	1:24¼
Reo	Johnson	1:31¼
Reo	Zerfass	1:42¼
Reo	Palmer	1:42½

Piston displacement of 231 to 300 cubic inches:

Corbin	Rogers	:45¼
Pope-Hartford	Terrell	:51½
Corbin	Lawton	:59
Rambler	DeLarato	1:02
Corbin	E. C. Wilcox	1:02¾
Corbin	E. B. Wilcox	1:04
Corbin	White	1:08¼
Stevens six	Meister	1:13
Maxwell	Bowe	1:22

Piston displacement of 301 to 450 cubic inches:

Chalmers-Detroit	Collington	:47½
Chalmers-Detroit	Eichorn	:49½
Ford	Englehardt	:51½
Merkel	Cuno	:53½
Packard	Roberge	1:04¾
Stevens six	Duffy	1:08¼
Pope-Toledo	Parker	1:10¼
Packard	Bloxham	1:17

Free-for-all:

Corbin	Rogers	:45¾
Ford	Englehardt	:48½
Chalmers-Detroit	Collington	:49
Pope-Hartford	Terrell	:52
Chalmers-Detroit	Eichorn	:52¾
Merkel	Cuno	:54½
Corbin	Lawton	:55
Knox	Duffy	:56¼
Corbin	E. B. Wilcox	1:02¼
Rambler	DeLerato	1:02½
Stevens six	James Duffy	1:08
Packard	Bloxham	1:09½
Corbin	White	1:12½
Corbin	E. C. Wilcox	2:01

HAIRPIN TURN ON CINCINNATI HILL, SHOWING STODDARD-DAYTON

PLANS RACES ON HILL

Worcester, Mass., June 27—Plans for holding actual hill races, instead of the usual climbing contests by single cars, are being formulated by the Worcester Automobile Club, of this city, for 1910, and the purchase of a hill for the purpose now seems a certainty. Through Samuel B. Stevens, of Rome, N. Y., one of the officials of the recent Dead Horse hill-climb, the plan for the purchase of a private hill has been given added impetus, Mr. Stevens saying he was willing to subscribe a substantial sum towards the purchase of such a hill. The matter of other subscriptions for the purchase has been talked over by the club members and already more than half enough money has been pledged. The hill under consideration will have a much steeper grade than the former Dead Horse hill and will be paved from top to bottom. The roadway will be laid out wide enough to allow three cars to pass, adding to the interest and excitement of the climb while making better time possible than on the old grade. At one point on the proposed hill there is space for a grand stand from which a clear view of most of the course will be obtainable.

FIAT AND CHALMERS STAR AT POINT BREEZE

PHILADELPHIA, PA., June 28—That the local public is not of the opinion that track racing is dead was amply evidenced by the turnout of upwards of 5,000 enthusiasts at Point Breeze track last Saturday on the occasion of the third annual spring race meet of the Quaker City Motor Club. The meet had originally been scheduled for 2 days, with a double header 24-hour race as the star card; but the paucity of entries for the proposed head-liner necessitated a quick shift to a 1-day meet, with the substitution of a special 100-mile race as the piece de resistance of the program.

Ralph de Palma and his Fiat stable and L. B. Lorimer and his Chalmers-Detroit 40 Bluebird appropriated everything worth while, although the fields they were up against were not sufficiently classy to push them to their limit. It was only in the 50-mile event, in which both these stars competed, that there were any thrills furnished, and even these subsided when the Chalmers-Detroit threw a tire about midway of the race, giving de Palma a practical walk-over for the honors. The latter started again in the trials for the mile track record. He was the first of the three entrants to take a hack at Barney Oldfield's Green Dragon figures of 1:02⅘, and when the Fiat Cyclone came under the wire just second under those figures the others failed to appear and de Palma annexed not only the record but the $100 cash perquisite that went with it.

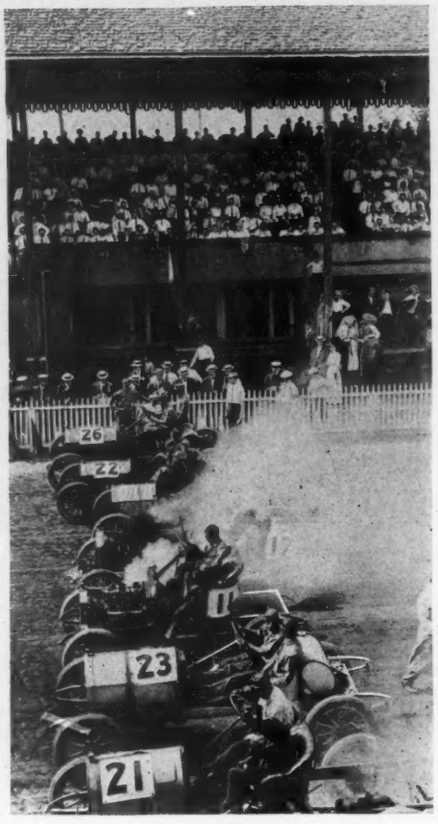
Victory for the Mitchell

In the first event, for equipped cars catalogued at $1,250 or less, two Mitchell 20s fought it out for 5 miles, Cherie Borie beating H. H. Crowell to the wire by a third of a mile.

J. B. Ryall, in a 30-horsepower Buick, easily beat out a good-sized field in the 5-mile, $1,251-to-$2,000 event, in 6:44⅕. Lorimer shot to the front at the start as if he was going to make a runaway of it with his Chalmers-Detroit 30, but Ryall caught him on the second mile and never was afterward headed. Archfeld's 25.6-horsepower Autocar also kept plugging away steadily and captured the place by a nose from Lorimer.

The 10-mile event, for $2,001 to $3,000 chassis, gave Lorimer his first chance to shine. For a while Laurent's 18-24-horsepower S. P. O. gave the fast-flying Chalmers-Detroit 40 a stiff argument, but later fell to the rear with the rest of the field. Lorimer's time, 11:34⅕, was the fastest of the day, excepting the intermediate time for that distance made by de Palma in the 50-mile race, 11:26⅗. The latter's time in the 10-mile event for chassis catalogued at $3,001 and over, was 11:46⅕.

Eleven cars lined up for the 50-mile free-for-all, which proved to be the event of the day. De Palma and Lorimer were away in the lead at the crack of Starter Gantert's gun, followed by Laurent's S. P. O. and Ryall's Buick. The Fiat and the Chalmers-Detroit, however, had all the others outclassed, and at the twenty-fifth mile had lapped the field at least twice. Lorimer had trailed de Palma up to this point like a shadow, looking for a good opening. Several attempts to pass him were stalled off by Ralph, until, just at the half-way point, Lorimer made his effort at the worst turn on the track, just beyond the grand stand, and paid for his temerity with his right rear tire, which was wrenched off when he cut to the inside, de Palma having taken his usual wide swing to negotiate that tricky corner successfully. It took just 2 minutes and 35 seconds to get the Chalmers-Detroit's bare wheel re-shod and the car going again; but on the following lap the same tire came off once more, this time causing a delay of but a minute and a half. But by this time the Fiat was over a mile. Then followed a gallant attempt 3 miles ahead, and the S. P. O. had passed the Chalmers-Detroit and led it by nearly by Lorimer to head off the foreigner and secure at least second place, but Laurent drove like a demon and landed at the tape 200 yards ahead of his pursuer.



START OF THE CENTURY

In the 100-mile race, in which the Fiat was entered, but did not start, Lorimer and the Chalmers-Detroit had things all their own way. He ran away from the other seven cars in the race right from the start, and at the finish had a lead of eleven miles on his nearest competitor, Brown's Autocar, and a car of the same make and model driven by Archfield.

Find Fault With Timers

The first appearance here of the New York Timing Club cannot be said to have been a howling success. Most of the howling was done by the local pressmen, who had to fight for their information. It was all right to hold the announcements of the time made in the short races till after the conclusion of each event; but in the 50 and 100-mile races the Philadelphia public has been used to getting the times at each mile, or at least at each 5 miles, and when nothing was forthcoming from the expert Gotham clockers the grand stand and the pressmen expressed themselves in no uncertain terms. Finally the 5-mile intermediate figures were reluctantly handed out to the newspaper men.

Summary:

Five miles, equipped, $1,250 or under—Borie, Mitchell, 20 horsepower, won; time, 8:16 4-5. Crowell, Mitchell, 20 horsepower, second; time, 8:45 3-5.

Five miles, equipped, $1,251 to $2,000—Ryall, Buick, 30 horsepower, won; time, 6:44 1-5. Archfield, Autocar, 25.6 horsepower, second; time, 7:22 2-5. Lorimer, Chalmers-Detroit, 30 horsepower, third; time, 7:23 3-5.

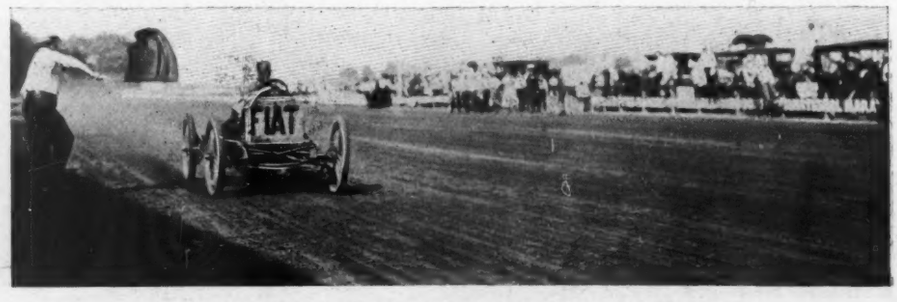
Ten miles, chassis, $2,001 to $3,000—Lorimer, Chalmers-Detroit, 40 horsepower, won; time, 11:34 1-5. Laurent, S. P. O., 18.24-horsepower, second; time, 13:10.

Ten miles, chassis, $3,001 and over—De Palma, Fiat, 60 horsepower, won; time, 11:46 1-5. Goodin, Stearns, 45 horsepower, second; time, 12:43 4-5. Willis, Apperson, 50-60 horsepower, third; time, 12:27 3-5.

Fifty miles, chassis, free-for-all—De Palma, Fiat, 60 horsepower, won; time, 57:43. Laurent, S. P. O., 18-24 horsepower, second; time, 1:01:05 3-5. Lorimer, Chalmers-Detroit, 40 horsepower, third; time, 1:01:09 4-5.

One hundred miles, special, cash prize $200—Lorimer, Chamlers-Detroit, 40 horsepower, won; Brown, Autocar, 25.6 horsepower, second; Archfield, Autocar, 25.6 horsepower, third. Time, 2:02:06 4-5.

Special time trial to beat track record of 1:02 4-5, cash prize $100—De Palma, Fiat Cyclone, 60 horsepower, won. Time, 1:01 4-5.



DE PALMA IN FIAT SMASHING TRACK RECORD AT PHILADELPHIA

GLIDDEN ENTHUSIASM IS SHOWN AT DETROIT

DETROIT, Mich., June 28—The Detroit committee in charge of the celebration of Glidden days, by which period the 3 days preceding the start of the Glidden tour from this city have been formally styled, has been busy. Letters have been sent out to the owners of motor cars in Detroit, urging them to enter the parade, and the publicity given the tour by the sending out of thousands of attractive posters and cards has been by no means inconsiderable.

At a meeting of the publicity committee, support was pledged by the Detroit board of commerce, the Detroit Wholesalers' Association, the Automobile Club of Detroit and several other civic bodies. Mayor Breitmeyer, who was in attendance, asked and received the privilege of attending personally to the decorations which will be placed in position for the banquet, to be tendered the A. A. A. officials and visiting manufacturers. All Detroit will decorate for the 3 days preceding the tour.

The efforts of the committee center chiefly in the parade with which it is intended to celebrate Saturday afternoon. It is intended to make this event positively the largest of its kind ever held. Virtually every private-owned car in the city is expected to be in line and the factories have promised to hold up shipments for a few days, in spite of the rush which is generally in evidence, in order to assist in making the affair as imposing as possible. The scheme is to load these cars with the women employes of the office forces. In order that no motorists may remain out on account of the time and expense necessary to thoroughly decorate, the committee announces that it will provide all cars not otherwise decorated with two flags, emblematic of the occasion. It is believed that the panoramic photograph which will be taken of the parade when it mobilizes for the purpose on Belle Isle will be by all odds the most interesting motoring photo ever taken. Each owner and entrant of a car in the parade will receive one of the photographs gratis.

The easiest part of the whole task of the committee has been the raising of the funds necessary to carry out the plan of the committee. Charles Grant of Grant Brothers, who reported at the mass meeting on this phase of the work, stated that, in his work, he had not received a single refusal.

GENERAL VIES OF THE TRACK AT PHILADELPHIA DURING MEET

Council Bluffs' Preparations

Council Bluffs, Ia., June 27—While the official announcement has not been made from Chairman Hower's office that Council Bluffs will be made the night control for the Glidden tour on the eighth night out from Detroit, it is almost an assured fact that Omaha will not have the opportunity of entertaining the Gliddenites as was first expected. It was announced a few days ago that letters had been received in Council Bluffs from Mr. Hower stating that that city had been definitely decided upon as the night control, but they were discredited by the Omaha crowd. One of the letters was received by George S. Wright, who recently made a visit to Chairman Hower's headquarters for the purpose of urging the change to his city, and the other by Dr. T. B. Lacey, president of the Iowa Association of Automobile Clubs. On account of the latter leaving town almost immediately after the receipt of the letter it could not be confirmed, but Mr. Wright has exhibited the letter received by him which is authentic. It stated that the maps were being prepared and that Council Bluffs would be the night control instead of Omaha, as previously planned. On this authority the Council Bluffs Automobile Club took the matter before the city council and secured concessions from that body in the way of parking facilities. As a result it is now planned to use Bayliss park, in the heart of the city, to park the cars. It will be roped off on three sides while the visitors are here.

The Council Bluffs Rowing Association and the Council Bluffs Fish and Game Protective Association, both of which have accommodations on one of the biggest and finest bodies of water in the state; the Lake Manawa Amusement company, with boating and bathing privileges, and the Elks Club, with commodious lodge rooms within 20 feet of the park, have all extended invitations to the motor car club to make their places their neadquarters while the Glidden tourists are in town. By this change 4 miles will be taken off the eighth day's run, and add an equal mileage for the ninth day, thus making an even 200 miles for the first day through Nebraska.

What Minneapolis Is Doing

Minneapolis, Minn., June 28—The Glidden entertainment fund is growing rapidly and the special entertainment committee of twenty-five is now going ahead putting the last finishing touches on the elaborate program arranged for the 2 days' stop here next month. Each tourist on arrival will be presented with an elaborate and very decorative souvenir booklet issued by the Western Architect Co. especially for this occasion, showing all the points of historic and commercial interest in Minneapolis. Inserted in this book will be a program showing each tourist just what is going on for his benefit during his stay here. Elaborate cap pins bearing the legend "Minneapolis-Glidden, '09" will also be presented each tourist. Frequent meeting of the committee as a whole and in its various subdivisions are being held; everything is working smoothly and the response from the business houses and motor firms having been very generous, everything indicates a rousing success of the Minneapolis Glidden entertainment. The motorists here never were more enthusiastic.

LORIMER IN CHALMERS-DETROIT IN POINT BREEZE RACES

MAXWELLITES ENJOY PLEASANT CLUB TOUR

NEW YORK, June 25—Tanned like Indians, but smiling and happy, even though the dust of four states permeated their systems, the participants in the 1909 spring tour of the Maxwell-Briscoe Motor Club swung into the light of old Broadway about 8 o'clock last Monday evening. If there had been any hardship no sign of it was to be seen, for every tourist, masculine as well as feminine, united with his fellow motorist in saying that they had a world of fun, impossible to obtain in any other way but by going into the open of God's country.

As a motoring organization the Maxwell-Briscoe Motor Club is unique because the one qualification admitting to membership is the ownership of a Maxwell car, and the tour just concluded was the first held by the club. The membership today is about 900, and since there are some odd 15,000 Maxwell owners distributed throughout the United States, the field from which new members may be drawn is very large indeed.

Stop at Tarrytown

The first noonday stop was scheduled to be at the Tarrytown plant of the Maxwell-Briscoe Motor Co. Tarrytown was reached by all cars on schedule time. Upon leaving Tarrytown the party headed for Bridgeport, which was reached by way of White Plains, Greenwich, Stamford, Norwalk and Westport. After 10 minutes' stop at the Stratfield hotel the tourists proceeded to Stratford, Derby, Seymour, Beacon Falls, Naugatuck and at 6:30 p. m. reached the Elton hotel at Waterbury.

The roads of the first day's run had been good and the travelers were high spirits by the time they had reached Springfield, where they pulled up at Cooley's hotel, to cater to the inner man. That the tour was not to be a joy ride in its entirety became painfully evident to the tourists after they had passed through Russell, about 18 miles out of Springfield. The touring book in the terse language of such books, simply said "Go straight ahead, immediately beginning grade. Stop for view and inspect brakes." But in order to view the country from the summit of Jacob's ladder you first have to get there, and between the foot of the ladder and its summit there lies one of the most heart-breaking hikes the average motorist can imagine. In turning up the mountainside the party had become separated into two sections, the first one led by R. C. Clothier, the chairman of the touring committee, and the second headed by Ernest Coler, the secretary of the club. Just as the second section was about to descend into a shallow stretch of woodland road, a sympathetic farmer woman waved her hand in frantic excitement and shrieked, "Hey you, don't you go down that hollow; if you do you'll get stuck like the rest of the fellows." "Where are they?" After which the cheerful answer came back, "Down there—stuck in the mud." And sure enough there they were, waving their arms at the latecomers, warning them to keep back. No amount of horsepower could have pulled the pilot car out of this predicament, so the tourists resorted to ropes and the strength of arms and pulled the car through. Next they gathered great quantities of underbrush, leaves and branches, and piling them on the treacherous road built a solid foundation on top. The drivers in the meantime had equipped the wheels with chains; at least those who had them. Then all the cars were connected with ropes extending from car to car, forming a veritable train, in which the more powerful motors and those equipped with chains lent some of their power to the smaller brothers of 14 horsepower. Then with a mighty pull of fifteen engines, the train lurched through the muddy stretch upon higher and drier ground.

The third day's run laid through Stockbridge to Newburgh, the noonday rest being at Poughkeepsie, where the night control was reached at 7 p. m. Going through Great Barrington much amusement was caused by a country woman who had become so scared by the approach of the Maxwells that she mounted a roadside fence and on reaching its top could not extricate herself from the pickets until some of the tourists had to come to her assistance.

The flavor of an endurance contest was added to the fourth day's run, which was from Newburgh to Delaware water gap. Early in the morning it began to rain and in the afternoon the continued downpour made the roads slippery and difficult for travel. On account of the bad roads and also because some of the tourists had discovered an applejack still in the mountains the cars made the Kittatinny hotel at Delaware water gap one by one and in pairs. But all turned up in good order and made themselves comfortable for the night.

Pennsylvania's Tollgate System

Allentown was the noonday stop and upon leaving it the tourists who had not before had occasion to travel through the state of Pennsylvania, found an opportunity to make themselves acquainted with the tollgate system of Pennsylvania. Upon approaching a certain locality one would see a bar let down across the roadway. In most cases the tollgate keeper would be a woman. Upon arriving in front of the house there would be a short conversation, then the bar would go up and the tour proceed. All of which seemed absurdly simple to all of the tourists except to A. Bender, who had fallen behind on account of tire trouble. Bender arrived at one of the gates and found it secured with lock and chain. "How much?" asked Bender.' "Fifty-four cents," was the answer, and Bender handed over the coin, expecting that now the gate would open. But it didn't. Instead, the gate lady very politely asked for additional toll for seventeen cars which had passed through the gate without having paid, the pilot very glibly arguing that the roads were in such awful condition that in all justice the toll company owed the tourists money instead of vice versa, etc. Evidently the woman had secured legal advice in the meantime and threatened to hold Bender prisoner. A little later a sheriff arrived on the scene, looking stern as it behooves a sheriff. No, Bender would not pay toll fee for anyone but himself. Well, then, the gate would remain closed. After Bender had relieved himself of much language concerning tollgates in general and sheriffs in particular he stopped his motor, lit a cigar and decided that he would stay right there for the next 6 months for all he cared. By and by the sheriff inquired whether Mr. Bender would not kindly move a little out of the way so as to allow other vehicles to pass. No, he would not. This was as good a place as any. Besides, Mr. Bender liked the scenery and having no pressing business on hand he preferred to remain just where he was. This obstinacy was too much even for the Pennsylvania sheriff, so he opened the forbidding gate and after much palaver persuaded Mr. Bender that it was really up to him to move along.

Entertained at Norristown

The Norristown Automobile Club very kindly sent six cars to meet the tourists and escort them over the roads around that city. A little later an additional four Maxwells arrived from Philadelphia and remained with the tour until the latter reached the Hotel Walton, in Philadelphia.

Because of the short distance to be covered on the Philadelphia-Atlantic City stretch the start was made at 10 o'clock a. m. After mounting hundreds of thank-you-ma'ams in Pennsylvania it did the motorists good to come upon the almost perfect roads of New Jersey. On the principle that a good road invites good running no time was lost until the party reached Hammonton. At this spot the pleasing information was received that 10 miles from town, at a small place called Elwood, the local judge and his minions of the law were lying in ambush to exact dire penalty. But, alas, it should not be, for on mounting the hill leading into the village, where the latest improved timing apparatus clicked forth what might have been fatal seconds the party went into low gear and crawled through the town, waving a red flag, tooting horns and otherwise showing its appreciation of Elwood's efforts to throttle modern progress in transportation. Atlantic City was reached

about 4 o'clock on Saturday afternoon. Sunday was spent in recreation and sightseeing.

The seeming length of the last day's run—Atlantic City-New York—was discounted largely by the quality of the roads over which it was made and every tourist fully appreciated the validity of New Jersey's reputation for good roads.

The morning start was made at 7 o'clock sharp. A 2 hours' noon stop united the tourists at Asbury Park and an additional stop became necessary in Plainfield. At 8 p. m. the procession rounded the corner of Fifty-fourth street and Broadway and the members sat down to a farewell dinner, conscious of having spent a most pleasant week. The DeLisser trophy, donated by Horace DeLisser, president of the Ajax-Grieb Rubber Co., was awarded to F. N. Freeman, of Gouverneur, N. Y., while the club trophy went to Dr. B. M. Severance, also of Gouverneur, N. Y.

WORCESTER IN LINE

Worcester, Mass., June 29—Upwards of 300 inmates of the five orphanages and day nurseries of this city were given an all-day ride by the Worcester Automobile Club, visiting Woodland park on the return trip. There were upwards of forty motor cars in line. Each of the machines was decorated by the club and the children further decorated the cars. When in the open country the cavalcade divided, some of the machines going to Shrewsbury, some to Auburn and some in other directions. All of the machines used were contributed by the owners. Everything at Woodland park was free to the children. So many machines were contributed by owners that many were sent back, the club being unable to use them. At the John street nursery a score of children were given a ride by Daniel F. Gay, two machines scheduled to call there failing to do so and the children being temporarily left behind. They received a longer ride than the others, however, to make up for it.

NEW TIMKEN DEAL

Detroit, Mich., June 28—Not only are the car makers increasing their facilities, but their allies in other lines are doing the same. The Timken-Detroit Axle Co. has recently been incorporated with $1,000,000 capital, to manufacture motor car axles in Detroit. Heretofore the Timken Roller Bearing Axle Co., Canton, O., has made axles in connection with its roller bearings, but the new company was formed to take over the axle business of the latter. The Timken Roller Bearing Axle Co. will control the new concern.

Large and modern buildings located on Clark avenue and the Pere Marquette railroad in Detroit, were secured a few months ago and have been made ready for occupancy. The drop-forge plant, in connection, has been largely increased and other improvements made. All the buildings are equipped with automatic sprinklers. A large amount of new machinery has been purchased and put in place. The officers of the Timken-Detroit Axle Co. are: W. R. Timken, president; H. H. Timken, vice-president; A. R. Demory, second vice-president and factory manager; E. W. Lewis, secretary and treasurer; H. W. Alden, chief engineer; F. C. Gilbert, assistant secretary, and W. H. H. Hutton, Jr., purchasing agent. The active management will be in the hands of Messrs. Demory, Lewis and Alden. Active operations have already begun.

The Timken Roller Bearing Axle Co. will change its name to the Timken Roller Bearing Co., and continue to manufacture, at Canton, roller bearings only. The increased demand will necessitate an enlarged output and the company is now putting in machinery that will give it an increased output of over 100 per cent. The entire factory that heretofore has been used for the manufacture of axles and roller bearings will be devoted to Timken roller bearings only. This is the fifth time the business has been doubled.

Binghamton Club Entertained at Boston

Boston, Mass., June 22—The members of the Binghamton Motor Club, of Binghamton, N. Y., who are competing for the Johnson trophy in the fourth endurance run held by the club, reached Boston this afternoon on the second day's run of their trip. It is their first trip to this section. The plans to have some twenty cars fell through because of the accident resulting in the death of Charles Brinton, a member of the club, last week, so there were only eleven machines competing. The first day took them to Albany and they left there this morning for Boston, the first control being established at Springfield. The first car to reach Boston was George F. Johnson's Stevens-Duryea, which is the pilot car. It was Mr. Johnson who gave the trophy. The car reached Boston at 4:56. Charles J. Sisson, Jr., in a Pierce-Arrow, checked in a minute later. Then came William G. Faetz in a six-cylinder Thomas, C. Fred Johnson in a Matheson, and Dr. J. McDonald in a Cadillac. Harry F. Conant in a Packard and G. Somers White in a Matheson checked in before the time limit. Those cars all had clean scores. The cars that suffered penalties on the run here were G. Tracy Rogers' Locomobile, Hiram Goldsmith's Cadillac and Homer Mix's Thomas. R. E. Mix was disqualified for not changing observers. The tourists reported the first part of the run from Albany very bad, but once Springfield was left behind it was an easy task to make the 100 miles well within schedule. The tourists spent Wednesday motoring around Boston to the points of interest, Charles J. Glidden having made out an itinerary that allowed them to see everything interesting without wasting time. On Thursday the party left here on the run home, having completed nearly half of the 746 miles scheduled. The first stop Thursday was at Providence, where the Rhode Island Motor Club made them welcome for lunch. From Providence they went to Hartford and on Friday from there to Newburg, N. Y. Saturday was the last day and they motored from Newburg to Binghamton.

HOW COLUMBUS ENTERTAINED

Columbus, O., June 27—More than 1,600 children, a large majority of them orphans, were given an outing at the grounds of the Columbus Country Club by the Columbus Automobile Club. The affair was the greatest success. The children, each provided with a card by the Salvation Army and Volunteers of America, were assembled in the yard of the state capitol at 8 oclock in the morning and more than 100 cars conveyed them to the grounds of the country club. On arriving at the grounds each youngster was given a lunch box. At 2 o'clock in the afternoon the start back was made. The car of Governor Harmon was first in the parade and next was that of Mayor Bond. A short parade of the streets of the city was made before the children were dismissed for the day.

ORPHANS' DAY IN BUFFALO

Buffalo, N. Y., June 23—About 2,000 Buffalo orphans were entertained by the Buffalo Automobile Club today with a ride through the city and a stop at Luna park. It took 300 cars to accommodate the little ones, and all were donated by the various motor owners of the city. The long line of motor cars, decorated for the occasion, left the different asylums at an appointed time and started together from the rendezvous for the trip around the city. The different parks were visited in succession and finally Luna park was reached. Here the kids were royally entertained.

POLICE CHIEF INDICTED

Indianapolis, Ind., June 28—The Marion county grand jury last Saturday returned indictments against Chief Robert Metzger, Captain Adolph Asch and Sergeant Charles Barmfurher of the police department growing out of the shooting of Samuel W. Dowden by a police bullet on June 8. Today Mayor Charles A. Bookwalter stated that the city would take no hand in the affair, not even to the extent of making an investigation. Mr. Dowden, who is a prominent attorney, was shot on the night of June 8 while riding in a motor car with W. Richardson Sinclair. The men were in a runabout in Delaware street when the police gave chase in a six-cylinder touring car. As the smaller car turned into St. Clair street slacking its speed to about 10 miles an hour, the police fired several shots, the first striking Mr. Dowden in the leg. In the indictments the police officers are charged with assault and battery.

LITTLE MARTINI RACER ON SCALES

PIPE CAR STARTING; NOTE COMMANDER OF GENDARMES SALUTING DRIVER OF CAR

Belgium's National

BRUSSELS, June 7—The Martini light racer, the only Swiss car to take part in the fifth anual hill-climb for the trophy offered by the daily journal La Meuse, of Liege, yesterday won the prize. Had speed been the principal factor in deciding the winner, then scores of other cars would have been ahead of the Martini, but besides speed there was taken into account for the final classification the weight of the car, the dimensions of the motor and the air resistance.

Forty-four cars, including several grand prix racing machines, were present. Probably 200 other cars were standing on the roadways, in the fields, in the improvised garages of the little village of Behane, from where the climb started, the finish being at the Baraque Michel, 8 miles up the mountain.

No prettier place could have been chosen for the starting of this event, there being mountains all around with here and there ruins of some old castle or an old church, and modern chateaux.

It had rained almost continually during the night, but it did little damage to the roads. However, there was a thick gray sky, with much haze or fog. As early as 5 o'clock drivers who took a ride up the 8-mile road to see how the course was at the summit of the hill reported that the fog was so thick near the end of the climb that it would be dangerous to start at the scheduled hour.

As each car came to the line the starter gave them oral instructions. Beside him was standing the timekeeper. The starter had a trumpet which was used in place of a revolver or flag. The first and the second calls were signals for the driver to get ready and for the flagman, who was standing some 200 meters up the road, to signal the next flagman, who in turn would flag the next, and so on. When the third trumpet call was sounded the car started.

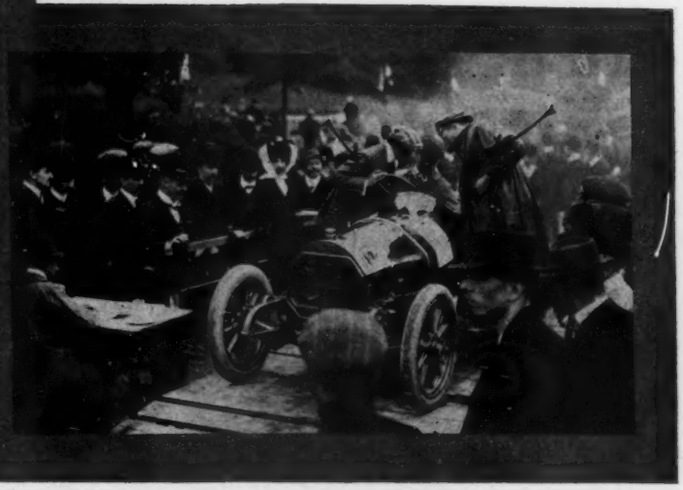
Of all the cars the 130-horsepower Mercedes 1908 grand prix racer made the biggest impression upon the crowd. Pilete, who was driving it did all he could to make it known that he was there, for when he went on the weighing scales it sounded as if a battery of big guns was being discharged. When he finally was given the word he simply flew away and in a few seconds had climbed the first few hundred meters where the gradient was 12 per cent, just as if he had been on a level road. It climbed the 8 miles at an average speed of 64.9 miles an hour, or nearly 8 miles faster than the next fastest car, the big 120-horsepower Itala.

Bus Makes Great Climb

Of the Belgian cars the Dasse, Pipe, F. N. and Imperia made the best starts. One of the Imperias carried eight passengers—it had an omnibus body—and although it weighed 4,246 pounds it managed to make excellent time, averaging 27.7 miles an hour, conceded by all to have been a remarkable record. The Pipe cars, which took third, fourth and sixth places, again showed their regularity. They really were the winners as they were plain touring cars, while the Martini and the F. N. —the first and second of the classification —were actually light racing cars.

Long before the cars were weighed the checkers were busy measuring the bodies, wheels, etc., of the touring cars. In several instances contestants had words with the checkers over the measurement of seat space, height of body and other parts.

CHECKER MEASURING DISTANCE BETWEEN HUB AND MUD GUARD OF TOURING CAR



CAR ON WEIGHING MACHINE; ARROW DENOTES OFFICIAL MEASURING SEAT SIZES

Big Mercedes After Starting, Showing Car on First Turn of the 8-Mile Climb

Martini Awaits Starting Signal

8-Mile Hill-Climb

The course is a trifle over 13 kilometers —8 miles—long. Right from the starting place for a distance of 300 meters the gradient is 12 per cent, then it drops to 9 and 10 per cent to continue for several hundred meters with less than 6 per cent. Then follows a quarter of a mile of 8 to 12 per cent and then many kilometers of almost level road. Between kilometer 5 and 6 there was a short stretch having 7 to 10 per cent, and again between kilometer 10 and 11 there were stretches with 8 to 10 per cent gradient. All told it was not a very difficult course and there were but nine turns, none dangerous when the road is in good condition, but some quite hazardous on a rainy day. The finishing place, la Baraque Michel, is the highest place on Belgian territory and about 2 miles from the German frontier.

There were four classes of cars, with two sub-classes in each. There was a class for racing machines, one for touring cars, one for closed cars and one for cars for sale. Only in this class was there no subdivision. In the others the subdivision was made according to the cylinders or cylinder capacity, those cars with 4 liters 600 or over being in sub-class 1 and those with less than 4 liters 60 in sub-class 2.

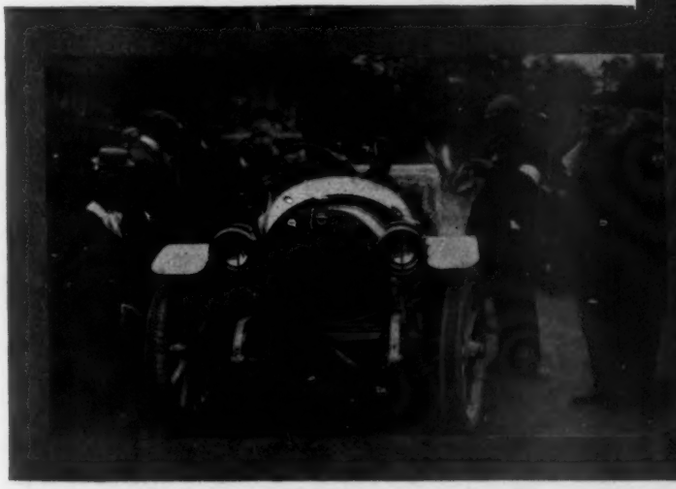
There were forty-four cars starting, of which thirty-nine made the entire climb. In class 1, which was for closed cars, there were six starters, a Germain, a Panhard, two Imperias and two Vivinius. The Imperia, with omnibus body and carrying eight passengers, the total weight being 4,246 pounds, took first prize. This car had a motor 3.5 by 4.7 and made the climb of 8 miles in 17:32, averaging 27.7 miles an hour.

In class 2, for touring cars, there were eleven starters, a Minerva, an Opel, a Clement, a Hermes, a Linon, two Imperias, two Vivinius and two Springuels. An Imperia, 2.95 by 3.9, weighing 2,079 pounds, took the prize. It's time was 16:51⅕. The Minerva was second and it's time of 9:52⅕ was the fourth fastest of the day.

In class 3, for racing cars, there were twenty-two starters, of which seven were in sub-class 1 and the others in sub-class 2. In the first division were the Mercedes, the Opel, the Itala, the de Dietrich, the six-cylinder Pipe, a Germain and an Imperia. The Itala, with its motor 5.7 by 4.7, weighing 3,678 pounds, took the prize. It's time of 8:30⅕ was second best of the meet. The Imperia, 4.1 by 5.1, weighing 2,534 pounds, was second in 10:04. Then followed the Pipe, Germain, Mercedes, Opel and de Dietrich. The Mercedes' time of 7:25⅗ was the record, and showed an average of 64.9 miles an hour.

Battle of Racing Cars

The starters in the second sub-division of racing cars were three Pipes, two Imperias, two Nagants, a Renault, a Dasse, a Metallurgique, a Vivinius, a FIF, a Hermes, a Martini and an F. N. Of these cars only the Martini, F. N., FIF, Dasse and Vivinius looked like racing cars. The Martini was classed first and subsequently was the winner of the Meuse trophy. This car weighed 1,793 pounds and had a four-cylinder motor, 2.5 by 3.5. It's time was 15:26⅕. The F. N., with it's 3.3 by 3.5 motor and weighing 2,376 pounds, took second prize of its class in the final classification. It's time was 13:14⅗. Then came two Pipe cars, each having a motor 3.5 by 4.1. One weighed 3,000 pounds and the other 3,110 pounds.



Imperia Awaits Word from Timekeeper; Cross Denotes Bugler Who Gives Starting Signal

Imperia Bus Which Made Climb Carrying Seven Passengers Up the Mountain

SWISS CARS SHOW BEST IN GERMAN TRIALS

BERLIN, June 9—The commercial motor car trials, promoted by the Kaiserlicher Automobile Club ended pretty nearly in a clean sweep of all the gold medals or first prizes being captured by the Saurer cars—which are made in Switzerland. In five out of the seven classes of vehicles did the Swiss makers get the prize, while the other two gold medals went to the manufacturers of the Hansa delivery car and to the Suddeutsche Automobilfabrik's light truck.

The trials started April 25 and ended May 13 for the delivery cars, trucks and omnibuses, and on May 23 for the motor vehicles with trailers. The total distance these last-mentioned vehicles covered was 1,482.8 miles, or an average of more than 70 miles a day, there being 20 days of actual road traveling. The longest day's run was of 89.5 miles and the shortest 40.4 miles. The trials of the lastzuge was under direct supervision if not direction of the army. The German government agreed to give to the winner in this class of vehicles an annual subvension of $2,250 for 5 years.

Big Field in Test

Starting in the trials were twenty-seven vehicles, six of which were from Switzerland and bore the Saurer name. There were seven classes of cars. Class 1 was for motor buses carrying from eight to fourteen passengers exclusive of the driver. A Daimler, a Suddeutsche and a Saurer were the starters. Class 2 was for motor buses, carrying more than fourteen persons in addition to the driver. A Saurer, a Stoewer and a Suddeutsche were the starters. Class 3 was for delivery motor wagons to carry an actual load of from 1,100 to 2,640 pounds. The starters were a Daimler, a Brennabor and two Hansa cars. Class 4 was for light trucks, to carry a load of from 2,642 to 4,400 pounds. A Saurer, a Suddeutsche and an Adler car started. Class 5 was for trucks carrying from 4,402 to 7,000 pounds and the starters were a Saurer, an Adler and a Suddeutsche car. In class 6, which was for trucks carrying a load of more than 7,700 pounds, the three starters were a Stoewer, a Daimler and a Sauer. Class 7 was for Lastzuge or vehicles with one or more trailers—the Renard train system. There were eight starters, namely, two Suddeutsche, two Daimler, one Bussing, one Ehrhardt, one Fahrzeug Eisenach or Durkopp and one Saurer. Every vehicle had a four-cylinder motor. All but four were fitted with solid tires, the four exceptions having pneumatic tires. Eight cars had single solid tires on the front wheels and double solid tires on the rear wheels. Thirteen vehicles used benzine as fuel, thirteen used benzol and one benzine-gasoline. The average bore of the twenty-seven cars was 4.1 inches and the average stroke 5.5 inches. A consumption contest per ton-kilometer was a feature of the general trials. The record of consumption of each car was kept as follows: Each day before the start the fuel can or reservoir of each car was filled up and immediately upon the arrival of the car at the night control a guard was provided for the car. After the formalities with the checkers and officials were over, the special checkers had the reservoir or fuel tank emptied. The contents were weighed and this weight was deducted from the total weight of the fuel which had been put into the can in the morning. The difference was the record for the day's run.

The German government was specially interested in the vehicles of class 7, the lastzuge or motor cars with trailers. The army took an active part in this class trials and every car had at least one military man as observer. The winning vehicle is to be placed at any time at the government's disposal and is to be purchasable at a reasonable price.

Just before the first day's start, the committee in charge made a change in the schedule of the average kilometers per hour to be observed in each class. It had at first been decided that cars of classes 1 and 3 should average 15.5 miles per hour, those of classes 2, 4 and 5 11.2 miles an hour, those in class 6 9.3 miles per hour and those of class 7 7.5 miles an hour. The final decision was an increase of 10 per cent in these averages in all classes.

Details of the Journey

On the first day one of the two Hansa cars of class 3 met with the first serious mishap of the trials, the bending of an axle. With the assistance of the repair shop motor car which followed, the damage was repaired and after many hours of hard work the vehicle resumed the trip, although it was out of the contest. None of the other cars had serious troubles, but several had to make minor adjustments en route.

On the second day the Daimler delivery car was laid up twice on account of a defective radiator. The Ehrhardt lastzuge which had a new kind of steel and rubber rear wheels stopped and changed them to wheels with solid tires. Soon after this change was made the rear axle snapped. A spare axle was produced and after a comparatively short time the new rear axle was fitted and the car again was going.

The Daimler truck in class 6 met with an accident on the third day when its radiator fan broke, damaging also the cylinder casting. Repairs were at once started.

Rain the fourth day had no serious effect on the contestants. Nothing happened to any car on the fifth day, while the Daimler truck, after having been thoroughly repaired, rejoined the others and continued with the Hansa as a non-contestant. The Ehrhardt trailer, after a run of 118 miles, also was again with the others. The Adler truck was nearly put out of the running on the sixth day, when the car ran off the roadway into soft ground. The observer was thrown off and the car nearly turned turtle. After some 3 hours' work the car under its own power again was on the road, making up considerable lost time, coming into the day's stopping place only 51 minutes late.

Cars On Exhibition

The cars were on exhibition in Dusseldorf on the seventh day. Thousands of people came from the nearby country to see the commercial and industrial vehicles and about 50 per cent of the crowd was business men, factory owners—in a word, men who are directly interested in the transportation and traffic problems. The eighth and ninth days passed rather quietly, only the Stoewer truck having troubles with its fan. The exhibition of the cars in Frankfurt-am-Main, on the tenth day, was a success.

A speed test was on the program of the eleventh day, but it did not seem to meet with the approval of the majority of contestants. The course chosen for this contest was where the authorities had shown the greatest disposition to make everything unpleasant for the contestants. The strictest orders had been issued that the speed regulations were not to be broken, and thus scores of guards were posted along the highways. Of the result of the speed test nothing in the way of information was given out by the officials of the trials. There was a hill-climbing competition on the thirteenth day, the distance being several kilometers, the gradient averaging 13 per cent. All the contestants went through the ordeal without loss of points. A day of rest or rather of exhibition in Strassburg came on the fourteenth, while on the fifteenth and sixteenth days all the cars went through the run without mishap. The sixteenth day also was without a hitch to either car or men, while on the seventeenth day one or two cars had minor repairs. This was the end of the trials as far as the motor buses, delivery cars and trucks was concerned, but the vehicles with trailers had to continue and return to Berlin under the supervision of the army staff officers and engineers.

Details About the Winners

The Saurer motor bus, winner of class 1, has a four-cylinder motor 4.3 by 5.5 and used benzine as fuel. On its front wheels the car had single solid tires, while on the rear wheel there were double solid tires. The bus transported fourteen passengers, the actual usual weight or load carried equaling 2,156 pounds. This bus consumed an average of 26.98 kilograms of fuel daily during the first 7 days.

The Saurer bus winner of class 2 was almost a duplicate of the winner of class 1 except that it was a larger vehicle, carried

eighteen passengers and the actual weight thus transported was 2,772 pounds. The consumption averaged 32 kilograms of benzine daily during 7 days.

The Hansa, which took the prize in class 3, has a four-cylinder motor 2.95 by 3.3 and carried a load of 1,100 pounds. Its wheels were fitted with pneumatic tires. Benzol was used as fuel, the average consumption per day during 7 days amounting to 12.2 kilograms.

The Suddeutsche or Gaggenau, winner in class 4, has a four-cylinder motor 3.3 by 4.5, and was fitted with solid tires. Benzine was the fuel used and the light truck carried a load of 3,300 pounds. It's average consumption during 7 days amounted to 24.9 kilograms.

The three Saurer vehicles, winners of classes 5, 6 and 7, were all provided with four-cylinder motors 4.3 by 5.5. Two had single solid tires on the front wheels and double solids on the rear, while the third vehicle—the car with a trailer—had single solid tires on all wheels. Two of the cars used benzine and the other benzol as fuel. The truck in class 5 carried a load of 7,700 pounds and the one in class 6 a load of 9,020 pounds. The load carried by the Saurer, winner of class 7, was 13,200 pounds, of which 4,400 pounds was the trailer. The daily average fuel consumption of the car with the trailer was 44 kilograms, that of the Saurer in class 5 was 28.3 kilograms and that of the car of class 6 34.3 kilograms.

FRANCE WILL MODIFY LAWS

Paris, June 19—The motor car has made necessary a new set of laws governing the use of the highway. This is felt more strongly in France than elsewhere, for having inherited a magnificent set of highways touring has grown to an extent unknown in less favored lands. Minister of Public Works Barthoux frankly recognizes that laws drawn up 100 years ago, when the mail coach was the fastest thing on wheels, and when intercommunication was slight, are altogether inefficient in these days of rapid and frequent travel. "For the new conditions we need new regulations," he declares in an official publication, and to obtain these new regulations he has decided on the formation of a temporary comthe road laws commission took place in Paris this week at the offices of the minister of public works, under the presidency of M. Leuthier, the general inspector of the department of roads and bridges. The commission comprizes high officials in the government roads department; the chief secretary of the minister of justice; Messrs. Max Vincent and Chaix, as representatives of the Automobile Club of France; Senator Humbert, of the U. V. F., represents cycling interests, while the technical press has as its spokesmen Baudry de Saunier, of Omnia; Henry Desgrange, of L'Auto, and Georges Prade, of Les Sports. The recommendations of this commission will serve as the basis for the road laws.

Eight Perfect Scores Made in Irish Trials

London, June 20—The reliability trials promoted by the Irish Automobile Club, commenced on Wednesday, May 26, and ended June 1. Out of the fifty-two entries forty-seven cars started and at the finish five had retired and eight were disqualified, while out of the thirty-nine that finished eight received perfect scores. The trials, which consisted of a tour of 955 miles through Ireland, included a special speed test, two hill-climbing tests, and a test for fuel consumption. The entries were divided into two sections, the first, being open to any car irrespective of ownership; and the second, limited to cars privately owned and driven. This second, or limited section, is a distinctive feature of the Irish trials, and always has been well supported. The cars competing in this section must be the bona-fide property of members of recognized clubs, and must be driven by the entrant or a member of his family who may not be accompanied by any hired or profesisonal chauffeur or mechanic who is not in the regular employment of the entrant. There were six starters in this section. Two withdrew and four finished, two of which received gold medals for having the highest number marks in their respective classes. The cars entered in the first section were divided into eight classes, while only two classes were represented in the second section. The winner of each class was presented with a gold medal, except the 40-50-horsepower Gladiator, which had no class competition; and which was given a silver medal for having made a perfect score. Aside from the medals, a cup was awarded to the class winner of each section which secured the highest aggregate number of points for reliability, fuel consumption, speed test, and hill-climbs, as shown by special formulæ. The class and cup winners were as follows:

GOFF CHALLENGE CUP, OPEN SECTION

Class and No.	Car	Total points
A	4—15-18-horsepower Bedford	905.57
B	9—12-horsepower Briton	890.47
C	12—10-12-horsepower Humber	948.71
CI	20—12-14-horsepower Marlborough	904.30
D	30—15-horsepower Star	942.12
E	42—20-horsepower Vauxhall	*990.76
F	48—18-24-horsepower British Gladiator	919.70
G	52—40-50-horsepower Gladiator	928.84

*E 42 winner of the Goff cup.

100-GUINEA DUNLOP CUP, LIMITED SECTION

Class and No.	Car	Total points
D	23—15-horsepower Marlborough	981.06
E	41—18-horsepower Mettallurgique	*992.32

*E 41 winner of cup.

STRENGTH OF FOREIGN CLUBS

Paris, June 20—At the recent annual meeting of the Automobile Club of France, it was stated that up to the first of this year the French club had 2,335 members, having accepted during 1908 only 124 new members, while 157 either dropped out or died. The year's receipts of the club amounted to $177,705 and the expenses to $115,736, leaving a net profit of $61,969. Among the expense items there is to be found $15,231 for wages and salaries to officials, $9,000 for rent, $6,258 for taxes and insurance, $7,250 for light and heat, $4,991 spent for banquets and receptions. What the club's receipts were from the grand prix of 1908 is not made public, but some who claim to know said the club got $8,000 out of it, which, however, is just half as much as the grand prix of 1907 netted the club. The 1908 Paris show netted $10,000 to the club. On the other hand, the promoting of the Coupe de la Presse road race in 1907 cost the club $12,780. During 1908 the Royal Automobile Club of Great Britain and Ireland accepted 2,400 new members. The club had 5,600 members in January, 1909.

BUILDING SMALL KNIGHT

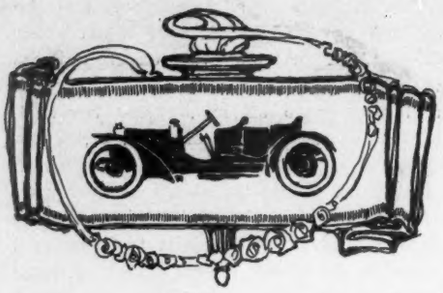
London, June 20—Encouraged by the great success of the Knight principle of engine design, the Daimler company is striking out on a new line for itself by placing upon the market a 15-horsepower four-cylinder light car fitted with the Knight engine. Experimental cars of this type have already been built and are undergoing tests on the road, but they will not be sold, it is expected, until the Olympia show in November.

COLUMBIA DIVIDEND ORDERED

Hartford, Conn., June 28—Judge Cross, of the United States circuit court in New Jersey, has signed an order authorizing the receivers of the Electric Vehicle Co. to pay all holders of unsecured proven claims a 20 per cent dividend. The order was secured by Lindabury, Depue & Faulks, attorneys, and permits the receivers to accept and pay the same dividend on claims aggregating $101,094.35, which had been filed out of time, and bars all creditors who have not heretofore presented their claims from participation in the distribution. The petition for the order sets forth that unsecured claims to the amount of $3,282,557.42, exclusive of interest, have been presented. Of this amount claims amounting to $2,710,235.49 were allowed in full, to which is to be added the $10,094.35 allowed by Judge Cross's order, while claims aggregating $18,409.33 were allowed for amonuts totaling $11,350.27. The petition recites that the receivers have in hand $150,000 in cash, and that $430,000 will be realized by the sale of the plant and other assets to the reorganization committee pursuant to a court order of June 15. The reorganization committee, that is, Kenneth B. Schley, Herbert Lloyd and C. Wendell Woodward, according to the petition will turn over the business and properties to the newly-organized Columbia Motor Car Co., of Hartford. The order signed by Judge Cross fixes the time for the final report of the receivers of the Electric Vehicle Co. at 60 days from July 1.

American Output for 1910

Al Reeves, General Manager of the A. M. C. M. A. Predicts An Increase of 125 Per Cent



NEW YORK, June 28—Following his 3 weeks' trip visiting the factories in the middle west, combined with information gained on a previous trip through Pennsylvania and New England, Alfred Reeves, general manager of the American Motor Car Manufacturers' Association, said yesterday that plans are being made for a production of 200,000 cars during 1910. This statement he makes after a careful compilation of figures received from makers of axles, magnetos, frames and other parts, as well as from motor car makers themselves. These plans may not be completely carried out, owing to the inability of parts makers to supply the demand, but in any case there is sure to be a 125 per cent increase over the production of 1909, which is placed at 70,000 cars, and which has been insufficient to supply the demand. Of this number 165,000 will be pleasure cars, 30,000 will be high-wheel buggies made by carriage concerns and 5,000 will be steam and electric carriages and commercial vehicles. The average price of these cars will be about $1,200, the cars below $1,500 being in the greatest demand, although there is no lessening in the demand for the cars of higher price. This will mean a total business in cars alone of almost $200,000,000.

Overproduction Not Feared

Yet with these extraordinary figures on next year's motor vehicle output, Mr. Reeves says there is no reason to fear an overproduction owing to the fact that America's greatest purchasing power, the middle class, has now entered the field, together with the farmers, who have been liberal buyers of cars during the present year. When it is taken into consideration that there are now 150,000 motor cars in this country and at least that number ought to be turned out next year, a fair idea can be gained of the present status of the industry. It is estimated that this year has seen an oversold condition of about 10 per cent. To many, of course, it would appear that they could have sold twice as many cars as they made, but according to Mr. Reeves, in most cases the demand has generally been supplied and only a small portion of the buying public has been unable to get cars. If next year's record production is to supply the oversold condition this year, the result would be an unsafe business condition. With the great purchasing power of the middle class and of the farmers, however, there is every reason to believe that next year's production will be readily absorbed.

With all the concerns struggling to double and treble their output, the safety valve on the business are the parts makers, who, working 24 hours a day, are unable to keep up with the demand, and labor for the factories, which is growing scarcer and scarcer in all the motor car manufacturing cities. These conditions may prevent the output reaching as high as present plans call for.

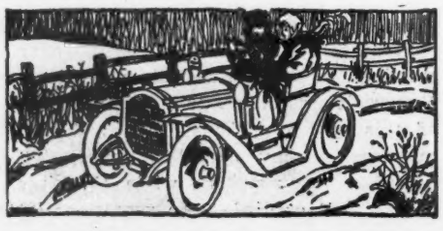
Views of Manager Reeves

"Unless one makes a careful compilation of the figures, such as are obtainable by the A. M. C. M. A., the statement that 200,000 cars will be made in 1910 would appear like a romance," says Mr. Reeves. "However, these figures are conservative, if anything, and almost all of them obtained from reliable sources. There will be no decrease in the demand for big and high-priced cars, for the ultimate aim of every owner is to possess one of those types. Incidentally, another one of our leading makers will next year make only six-cylinder cars. The car of the intermediate type and those of low price will, of course, sell in the greatest numbers, and even now are in demand far beyond the supply.

"Such conditions, when other lines of trade are at a discount of 10 to 40 per cent, seems extraordinary, but it all proves that the motor car is now a necessity more than a luxury, and that it will sell in good times as well as bad. The importance of the farmers in the buying of cars and the influence they will have on road improvement is more than the average easterner can understand. There are more than 2,000,000 farmers in this country and they have had a big share of prosperity. Kansas, Iowa and Nebraska have been good motoring states. One maker in Anderson, Ind., told me that 75 per cent of his $1,250 cars were sold to farmers. The salaried man who believes in good things for his family and the business man who requires quick individual transportation, has made for a greater demand for motor cars, and that situation will be increased in 1910.

Factories Being Enlarged

"Without exception every one of the factories I visited is planning for increased production, and putting up new factory buildings and installing new machinery. One of the biggest producers of this year plans to make 30,000 machines in 1910; the next highest producer will make 20,000 to 25,000; an eastern concern 12,000 and two other western concerns 10,000 each. Below that figure there are a score of concerns that will make anywhere from 1,000 to 8,000 machines, and it is a mighty small producer indeed who is not planning for 500 or 600 cars.



"The figures I have taken in making up my list of 200,000 cars is the scheduled production of eighty of the most prominent concerns, although there are at least twenty-five more concerns whose cars might be termed factors in the market."

Mr. Reeves visited the factories in Cleveland, Dayton and Cincinnati, Ohio; Newcastle, Muncie, Indianapolis, Anderson, Mishawaka and Auburn, Ind.; St. Louis, Mo.; Chicago, Moline and Peoria, Ill.; Newark and Rochester, N. Y., and next month will visit the factories in Michigan and Wisconsin.

Reeves' Trip in Detail

On the situation at the factories, Mr. Reeves said: "At Cleveland Paul Gaeth is making Gaeth cars in his usual conservative way, turning out a limited number, carefully made. There will be comparatively few changes on the 1910 Gaeth as compared with this year's car. Mr. Gaeth is adding to his line a single-cylinder commercial wagon for light delivery work.

"At Dayton, O., I was astounded at the size of the Dayton Motor Car Co.'s plant, which covers three city blocks. A new six-story addition to the factory is being put up that will be 140 by 110, supplying almost 1,000 square feet more of floor space. I doubt if any concern in the country makes more of its car than does the Stoddard-Dayton company. It even makes its own axles, springs, frames and aluminum castings. Something like $60,000 worth of new machinery is being installed that will make for a great production in 1910. The Dayton company is famous for its care of agents and C. G. Stoddard, the general manager, says the same agent policy will be continued next year. As indicating the size of the plant, I might say that there are 1,600 men employed and that sixty men are engaged in the inspection and testing department.

"The new Courier, a low-priced car being marketed by a new $200,000 corporation in Dayton, is practically an offshoot of the Dayton Motor Car Co., for in it are most of its officers and a number of its employees. The car will follow the lines of the Stoddard-Dayton, but on a smaller scale. It will be high class throughout.

Placed at 200,000 Cars

Reports Received From Factories Show Most of Makers Have Increased Capacity

"Another concern in Dayton which is making progress is the Speedwell Motor Car Co., which has planned a production of 700 cars for next year. It is putting up factory additions and R. D. Schenck, the president, tells me most of the product has been spoken for by agents.

"Incidentally I was told in Dayton of a new taximeter that has many advantages over taximeters now in use. Not alone does it register the distance, amount of fare and supply similar records, but it turns out a slip just like a cash register, giving the distances, the number of the cab, the time and the fare. This is given to the patron when he leaves the cab.

"Cincinnati has been a great city for carriage manufacturers and at least ten big concerns have announced their intention of turning out motor cars. The majority of them will make cars of the buggy type, but the Jewell Carriage Co. is putting out a high-grade four-cylinder car to be known as the Ohio that should become a factor in the trade.

"From Cincinnati I visited the giant plant of the Maxwell-Briscoe Motor Co. at Newcastle, Ind. It will not be very long before the name of that town will be changed, for the Maxwell-Briscoe people have the biggest factory there and are factors in the general life. There is a Maxwell amusement park, a Maxwell ball team, a Maxwell gymnasium and a Maxwell-Briscoe band of forty pieces which is a credit to any community. J. B. Meyers, the general superintendent, stated that 1,600 men are now on the pay roll and there is great difficulty in housing the help. Houses have been put up at an astonishing rate, but upon my visit there at least 200 men were living with their families in tents.

Care in Maxwell Manufacture

"The manufacture of Maxwell cars is ideal, for the raw material goes in at one end of the factory and comes out a finished product at the shipping platform. Cars are coming through at the rate of forty a day, but the factory is far behind in its orders. A new addition is being put up 721 by 310 and another 721 by 60. A third floor is also being added to the present factory, all of which is expected to result in a greater production of cars next year.

"At Anderson, Ind., the Buckeye Mfg. Co. stated that 75 per cent of its product this year had been sold to the farmers and that it is planning for 1,500 cars for next year. It says the agricultural people have more money than at any other time in their history and look upon the motor car, not as a luxury, but as a necessity for individual transportation.

"Claude E. Cox, who designed the Overland, is now chief engineer of the Inter-State Automobile Co. at Muncie, Ind., which plans a production of 2,500 cars for next year. It now has a building 440 by 140 and will build an addition equally as large. F. E. Hart, a successful business man of Muncie, is president of the company, and D. W. Henry sales manager.

Visit to Indianapolis

"Indianapolis manufacturers accepted an invitation of H. O. Smith, our chairman, for a luncheon at the Columbia Club on my visit to that city. In attendance were John N. Willys, Walter E. Marmon, V. A. Longaker, A. C. Newby, Carl Fisher, Herbert Rice and H. O. Smith.

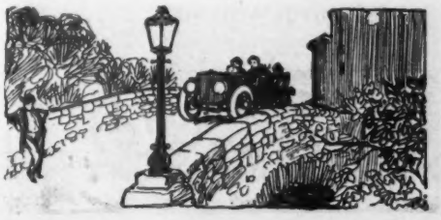
"One of the sensations in the town has been the advancement of the Overland under the leadership of John N. Willys. The company now has five factories working to get out the cars promptly and keep agents supplied. It will have two new buildings near the present Overland factory, each 368 by 80, two stories high. A production of 10,000 Overlands is planned for next year and 1,000 Marions. Overlands will be turned out at the new Pope-Toledo plant at Toledo, as well as in Indianapolis.

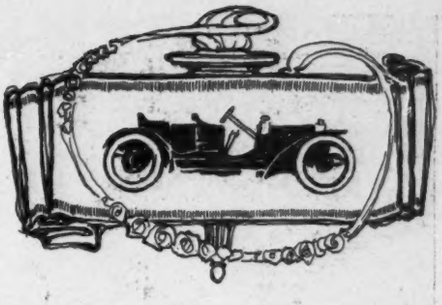
"That more and more concerns are making their own parts, is evidenced by what I saw in the American factory, which I visited with Mr. Longaker. Almost the entire car is being made under one roof instead of depending upon parts makers for supplies.

"Howard Marmon's genius in motor car construction is evidenced in the small Marmon of this year, which will be continued with comparatively few changes for 1910. The company will have two machines in the Glidden tour.

"The Premier plant is working nights, for H. O. Smith is a firm believer in caring for agents, by giving them cars when the demand from the public is strongest. The Premier has had an unsually successful year in contests, and three of them will be entered in the Glidden tour in addition to the Premier that will act as an official car. Additions will be made to the plant next year, although Mr. Smith is inclined to grow conservative rather than with a rush.

"A. C. Newby at the National plant, showed me plans for a new addition that





will supply 40,000 square feet of space. The present line will be continued next year with some slight changes, the cars having made good in every way. There will be a small four and a big four, and a little six and a big six.

"The Marion plant is busy turning out Overlands as well as Marions, being controlled by the Overland people. The Marion's performance in the Chicago road race was a matter of much favorable comment.

Empire a Newcomer

"The Empire is the latest car in the field, being the production of R. H. Hassler, backed by a company in which A. C. Newby and Carl Fisher are interested. The old Mohawk Cycle Works factory on the outskirts of Indianapolis has been taken and 1,000 cars will be put through for 1910. The motor is 3½ by 4, cast en bloc. A runabout body is fitted. The Wheeler & Schebler carbureter plant is running full force and shipping over 17,000 carbureters per month. A factory addition is being at present pushed ahead.

"St. Louis is a busy town just now, the three companies there being the Moon Motor Car Co., St. Louis Car Co. and Dorris Motor Car Co. Next year the horse power of the Moon car will be increased from 35 to 40 and in addition the company will make a cheaper car rated at about 30 horsepower. A new concern will take over the St. Louis Car Co., which will discontinue the American Mors to make a new six-cylinder car of American design with a motor of 50 horsepower. The general manager is H. E. Walton.

"The Dorris Motor Car Co. continues to turn out high grade cars and each year has seen a decided increase in its business. Manager Krenning is a believer in the one-chassis idea and the 1910 car will be a refinement of the same model which he has used for the past 3 years and which has proven so satisfactory.

"At Peoria I noted a decided increase in the size of the factory of the Bartholomew Co., maker of the Glide car. The plant will be aided in its production next year by a new factory, plans being under way for the taking over of the old St. Louis Carriage Co. plant. Mr. Bartholomew besides his interest in the Bartholomew company with his son A. Y. Bartholomew and G. G. Godfrey, is the president of the Avery company, one of the largest manufacturers of agricultural machinery in the country. The Avery plant is a revela-

BIG PLANT OF THE NORDYKE & MARMON CO. AT INDIANAPOLIS, WHERE MARMONS ARE MADE

tion in the manufacturing line and many of its methods are being incorporated in the motor car plant. The car next year will be a refinement of this year's 45 horsepower with a motor 4¾ by 5, the point being made that the satisfactory car of this year required little change.

Activity in Chicago

"In Chicago I visited the Holsman Automobile Co. This company is credited with being the leader in the motor buggy business and its business is constantly on the increase. At Chicago, I was told that the International Harvester Co. is planning to produce 10,000 buggies next year, while Sears, Roebuck & Co., the mail order house, gave an order recently for 10,000 axles to be used on motor buggies for 1910.

"Moline, Ill., is getting to be one of the leading motoring cities of the country, having three factories in operation. At the Midland plant they were preparing a car for the Glidden tour, and making arrangements for next year's trade. A. E. Montgomery stated that the company had been favored with an excellent southern trade, particularly in Texas, which seems to be coming to the front as a motoring state. At the plant of the Velie company I found a factory 80 by 220, four stories high, with an army of workmen building an addition that will double the present capacity. The present car now will be continued next year.

Busy at Moline Factory

"At the Moline Automobile Co.'s plant, W. H. Vandervoort stated that the last of the product would be shipped from the factory by July 1 and that work is now under way on the 1910 models. He plans to continue his care of agents, supplying cars instead of promises and believes strongly in supplying a sufficient number of cars to enable an agent to make a profit on his year's business. Additional help is being taken on and more room added for manufacturing purposes, which will permit a 50 per cent increase in production next year. Three roadsters will be entered in the Glidden tour for the Hower trophy and they will not be of the untried sort, for they were on the road a month ago and are being put through a series of severe tests. Besides their high-class four-cylinder car, the company makes a four-cylinder machine especially for the country trade. It has a road clearance of 11 inches.

"The American Simplex car, made at Mishawaka, Ind., is the only high-powered two-cycle car built in this country. It is equipped with a motor of 50 horsepower at 900 revolutions. A feature of the car that Messrs. Graham and Gulick showed me, was a carbureter of their own design which vastly reduced the gasoline consumption, which has often been made a point in cars of the two-cycle type. The company has a well-equipped factory and is building an addition that will permit about a 50 per cent increase in the production for 1910. One of the American Simplex cars will be a competitor in the Glidden tour.

"To show his faith in the reliability and continuous running qualities of the buggy type of machine, W. H. McIntyre, the manufacturer of the McIntyre car at Auburn, Ind., has entered a machine in the Glidden tour. It is expected by continuous running to make the same average speed as cars of greater power. It will be the only one of its type in the tour. It is equipped with a two-cylinder air-cooled motor and is shod with solid tires. Incidentally, Mr. McIntyre has been a resident of Auburn for 40 years, owns the daily paper there and is interested in a number of its industries. His carriage factory turns out 30,000 to 40,000 horse-drawn vehicles annually.

Mora Plant Modern

"No factory that I visited is more modern than the plant of the Mora Motor Car Co. at Newark, N. Y. It is light and clean, with high ceilings, and Mr. Mora insists it all helps the men turn out good work. All the 1909 cars will be out by July 10 and will be delivered immediately to customers through the agents. Work is now under way on the 1910 product, which will be new in several features, although carrying most of the features that have made the Mora car so successful during the past 2 years. The horsepower of the four-cylinder car will be increased from 24 to 35. Among the other features is the casting of a ledge on the engine base reaching to the radiator which, combined with the original Mora under-pan idea, makes a complete covering of the under part of the machine, insuring a clean motor and clean working parts.

"S. H. Mora, owing to his long experience as sales manager of the Kodak company, thoroughly understands the handling of agents, and appreciates the necessity of keeping them supplied with cars at a time when the cars are in the greatest demand. His arrangement with agents is such that almost all of them receive an allotment of cars sufficient to make a substantial profit. This makes their loyalty to the company an asset of exceptional value.

"Great preparations for next year in the way of additional buildings and the demand for additional help, to say nothing of the betterment of cars, both in material and construction, coupled with the reports of agents asking for 1910 cars and territory, enables even the poorest prophet to declare for a great selling year in 1910."

Factories Increasing Capacities

Predictions as to the size of the 1910 output as made by Mr. Reeves do not seem to be excessive in view of information received by Motor Age from the various factories as to the growth of their plants, made necessary to meet the demand for cars. The Maxwell-Briscoe Motor Co. is one of those spreading out, it having just been announced that the plant of the Atlantic Rubber Shoe Co., at Providence, R. I., has been added to the string of Maxwell factories. The new place comprises about 11 acres, with a three-story building. The plant was erected 5 years ago at an expense of almost half a million dollars and is equipped with

a 400-horsepower power plant. The Providence factory will help care for the eastern trade. The Tarrytown plant is booked to turn out 4,000 cars for next year, while Newcastle will produce 12,000. In all the Maxwell people are counting on building 22,000 cars for next year.

Since January 1 the Winton Motor Carriage Co., of Cleveland, has been making extensive alterations and additions. In the assembling department 5,800 square feet has been added at a cost of $5,000, while 100 additional men have been put at work. At a cost of $2,000, 1,850 square feet has been added to the sheet metal department, which gives employment to fifty more men. In the repair department twenty-five men have been added and the plant increased by 4,500 square feet at a cost of $3,000. It is the intention of the Winton company to make more additions during the last half of the year, but at the present time it is not ready to divulge its plans.

Packard Plant Grows

Packard is in good shape to handle the 1910 production, having added 4 acres to its old plant, which makes the present one about 18 acres. The maximum number of employes for the 1909 season was 3,250, but it is expected that the number will be increased in 1910. Additions recently made include the enlargement of the machine shops, body-building departments, paint shops, trim shops and truck-erecting department. The service department for the manufacture of repair parts for previous models has been increased, while the new power plant has been practically doubled in size and power.

Extensive enlargements are now being made in the factory of Nordyke & Marmon Co., Indianapolis. The Marmon plant is already a very large factory, occupying 11 acres of ground, with a total floor space of 280,000 square feet, and employing 800 to 900 men. Several new buildings have been added in the last few years—two of these are not shown in the accompanying picture. Another building is now to be erected at the extreme rear of the plant, with floor space of 7,500 square feet. This latest addition will house the testing and repair departments, and the space formerly occupied by these departments will be used for enlarging the machine shops and final assembly floors. All the buildings are well ventilated and well lighted and contain an elaborate system of overhead and surface tracks. The enlargements now being made and additional equipment being installed will permit a greatly increased output of Marmons for the 1910 season.

Thomas B. Jeffery & Co. will have a total floor area of 800,000 square feet for 1910, 186,256 feet having been added recently. One new building is of steel frame construction, with solid concrete walls, which gives a general area of 98,688 square feet. This will be devoted to the inspection and exterior finishing department. In building No. 7, which will be devoted to final inspection, 41,120 square feet has been added, while building No. 5, the assembly and stock rooms, has grown 16,488 square feet. The original Rambler factory, No. 1, has increased 30,000 square feet in size. In No. 5 there will be installed a new laboratory, while a new office building will be two stories high and will be constructed of brick, occupying two sides of a city block.

Peerless Factory Changes

The additions being made by the Peerless Motor Car Co., of Cleveland, are extensive ones, including a new three-story factory building containing a new machine shop as well as factory office and city show room, running along Oakdale street. A four-story office building will be ready for occupancy about the first of September. Then there will be two other buildings, one a three-story assembly room, while the other is an extension to Quincy avenue of a building already erected. This will give the Peerless company a total area of 8½ acres of floor space. The new group is composed of buildings, all three stories in height, except the office building, which is four. Steel, brick and reinforced concrete enters into the construction of these buildings. The Peerless company employed 1,125 workmen on its 1909 output, but expects to increase this. It made 1,100 cars for 1909. Recently the Peerless company has been reorganized under the laws of Ohio. Formerly it was working under the laws of West Virginia, the capitalization being $600,000. The reorganization calls for a capital stock of $3,000,000.

The Apperson Brothers Automobile Co., of Kokomo, Ind., is at work on two new three-story buildings which will be ready for occupancy during August. This will give a floor space of about 10,000 square feet in excess of double the floor space of the old plant. When the new buildings are ready there will be a rearrangement of departments. It is stated that twice as many workmen will be employed as before and that the 1910 output will be three times as great as in 1909.

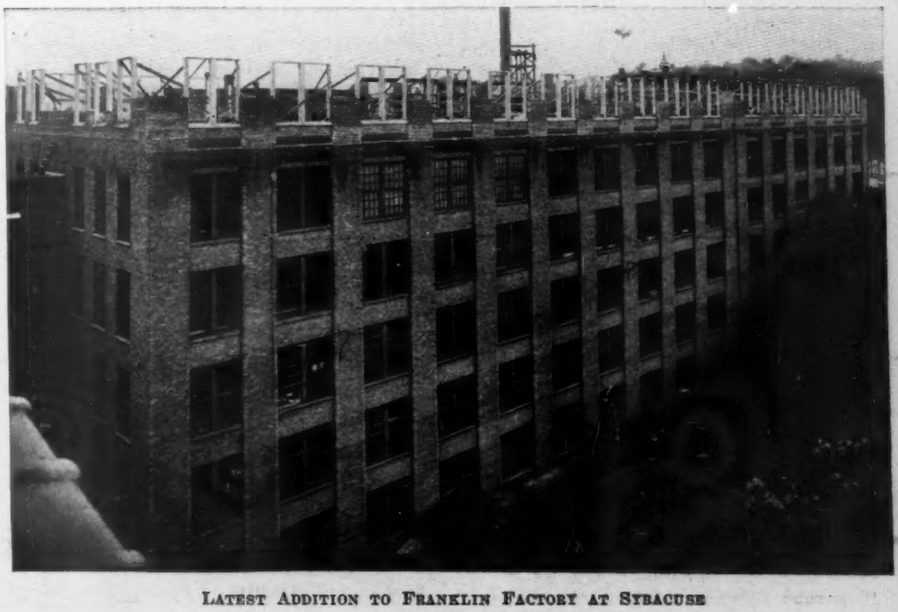
"Although our production at the present time, month for month, is running anywhere from 15 to 25 per cent greater than in any other year before in the history of the company, we have made only a few small additions to our plant," writes the E. R. Thomas Motor Co., of Buffalo. "The entire factory floor space added amounts to about 30,000 feet of floor space."

What Franklin Is Doing

Since January 1 the H. H. Franklin Mfg. Co., of Syracuse, N. Y., has erected a building which has provided quarters for the Franklin school and another structure to be used as an employment office. The square feet of floor space in these two structures is 7,184. The floor space in use in the Franklin factory is 266,826½ square feet, all of which, except 35,000 leased near by, is on the main factory site.

An addition made during the last 6 months to the E-M-F plant at Detroit is a building 490 by 50 feet and three stories high, which is used for the receiving and shipping departments, store rooms and assembling departments. It is a duplicate of the original building which the company is using for the making of parts. In addition to this the company has a test house 40 by 100 feet and one-story high; a heat-treating department 40 by 60 feet and an addition to the power house 30 by 40 feet. The approximate cost is estimated to be $100,000.

One of the largest deals of 1909, made in anticipation of 1910, was the sale of the Pope-Toledo plant at Toledo, O., to the Overland company, of Indianapolis, which contemplates increasing the size of the plant purchased by the construction



LATEST ADDITION TO FRANKLIN FACTORY AT SYRACUSE

of a three-story building to cost $50,000. The Overland company plans to employ 1,500 men, with the minimum production of cars placed at 10,000, with a possibility of the maximum being 15,000.

The Regal Motor Car Co., of Detroit, has let contracts for an extensive addition to its plant which, when completed, will give a manufacturing floor space of 475,000 square feet. The building will be 237 by 54 feet, with a frontage on Piquette avenue, and will be four stories high. The first floor will be used for offices, and the others will be given up to manufacturing and assembling. The new engine and test house will accommodate about twenty-five engines at a time for block test. The company operates its own brass and aluminum foundry. Employment is given to about 700 men and the company will build from 3,000 to 3,500 cars in 1910. Deliveries start August 15.

Gaeth Adds to Plant

Between January 1 and July 1 the Gaeth Automobile Co., of Cleveland, O., has made an addition to its repair and overhauling departments, an addition 50 by 20 to its machine shop and blacksmith shop and an addition 100 by 40 to its paint shop, all of which means the employment of thirty-one more men. The company also is contemplating purchasing for storage and trimming purposes the adjoining building, which has an aproximate floor space 60 by 20 and which is two stories in height.

The Olds Motor Works, of Lansing, Mich., has put into its factory in the neighborhood of 376,000 square feet of hardwood floors; it has equipped all buildings with an industrial railroad track with about a mile and a half of track; it has erected a new two-story stock room 70 by 178 feet; a new pickling house 35 by 35; a new testing building 52 by 90; a two-story power house 120 by 90; a new steel stock room 50 by 50; a scrap building 12 by 36; a new enameling oven 30 by 48; a new gasoline house 8 by 22; a carbureter department 20 by 20; an addition to the pattern shop 50 by 60, and has doubled the size of the trim shop. The new test room enables the company to do all its testing on special testing apparatus and does away with road testing. The machine shop has been rearranged into departments, giving each different class of work a department by itself.

Additions to the Lozier plant give 33,627 square feet of additional floor space, of which the hardening and engine-testing department gets 4,500, the machine shop annex 26,127 and the rough stock building 3,000. In the engine-testing department, which is 30 by 50, are nine testing blocks constructed of solid concrete to reduce vibration. It is proposed to have the finished stock room in one end of the machine shop annex and the chassis and motor assembling will also be done in this building. The building proper is 162 by 150, while there is a jog on the southeast corner where will be located the tool stock room.

Extensive improvements are being made to the plant of the Auburn Automobile Co., of Auburn, Ind. Early in January the company completed a new building 60 by 160 feet, a small part of which is being used for offices and show room and the other part for the storage of heavy hardware. This has a floor space of 19,200 square feet. There has been an addition to the paint shop of 40 by 70 feet, which gives an increased floor space of 5,600 square feet. These buildings cost in excess of $25,000. The factory force has been increased 100 per cent over last year, while the company is contemplating even larger additions to the plant.

While the Moon Motor Car Co., of St. Louis, is not making any additions to its plant, it is making preparations for a largely increased business in 1910. Its business has grown so in the past year that it has increased its working force 50 per cent both in the office and in the factory. The additions of several large machines has given the Moon company a capacity for turning out cars twice what it had 6 months ago.

The Oakland Motor Car Co., of Pontiac, Mich., is making its plans to manufacture 3,000 cars for 1910 and during the last 6 months it has added to its facilities by putting up a two-story brick building 80 by 140, containing approximately 22,000 square feet of space, the building costing $10,000 and giving employment to fifty additional men.

While the Haynes Automobile Co., of Kokomo, Ind., is not making any additions to its plant, it has torn out partitions and made other alterations that give it about 5,000 square feet more of working space. It is the intention of the Haynes company to triple its output for next year.

Has Added Nine Buildings

A phenomenal growth is reported by the Speedwell Motor Car Co., of Dayton, O. From January to July it has put up nine additional buildings, which have nearly covered the 3 acres of ground owned by the company. Even these new buildings are declared to be insufficient and the company has purchased an additional 3 acres adjoining its present plant and on it is building other large buildings which will afford additional facilities for finishing, upholstering and final assembling. A spur track taken from the New York Central lines will be extended past these buildings and all car load shipments will be made from there. It is expected that the company will employ from 1,200 to 1,500 men on the 1910 product.

The York Motor Car Co., of York, Pa., has increased its floor space five times in the last few months and although at present it has 100,000 square feet of space available it finds itself cramped for room. Since the first of the year it has spent between $45,000 and $50,000 on machinery, mostly automatic. Finishing up the 1909 product the company worked a double shift, the day men working until 10 p. m. and the night men starting at 7 o'clock in the evening and working until 6 o'clock in the morning.

The Bartholomew Co., of Peoria, maker of the Glide, did not make any changes during the first 6 months of the year. At the present time its floor space reaches nearly 100,000 square feet, but it has about completed arrangements whereby the factory capacity will be more than doubled for next year.

During the past year the Babcock Electric Carriage Co., of Buffalo, has added to its factory one brick addition 50 by 100, which is used entirely for finished work. The company also has bought property adjacent which is 50 by 100 feet on which is a two-story building which is being remodeled and which will be used for the trimming and woodworking departments. These additions represent an outlay of about $30,000 and means an increase of 60 per cent in the working force. The company also has established branches in Rochester, Cleveland and Chicago, which represent an outlay of considerable capital. There is something like $50,000 invested in Chicago and more than that in Cleveland.

Commercial Car Activity

In the realm of the commercial car there also is great activity. The Mack Brothers Motor Car Co., of Allentown, Pa., has made a substantial addition to its plant since the first of the year, having completed a blacksmith shop and paint shop. The former is 64 by 64, of concrete construction and with a special ceiling 24 feet high. The paint shop is 106 by 44, of concrete and brick construction and provided with a special vault in which are kept patterns and drawings. This gives 25 per cent more floor space to the plant.

The Rapid Motor Vehicle Co., of Pontiac, Mich., has a floor space area a trifle under 4 acres, the plant consisting of two main buildings, one of which is used as a machine shop and final assembling department and the other as a paint and chassis assembling department. In a wing are the rough-stock department, the blacksmith shop and tinshop. Besides these there are the body plant, dry kiln and power house all of which are concrete except the body plant, which is of brick. The company employs about 500 men.

The Reliance Motor Truck Co., of Owosso, Mich., is in its new plant, which is built of brick, cement and steel. It is one-story high, 65 by 500 feet, and with a power house 40 by 60 feet. It cost approximately $40,000 and gives additional room for about 100 men.

TOURING FROM SAN FRANCISCO TO PORTLAND

SAN FRANCISCO, CAL., June 25—What must strike the motor tourist making his first trip through California most impressively is the wonderful variety of scenery that the state offers. Leaving the metropolitan centers, one can travel through the broad boulevards of the suburban cities or, following the coast line, can wind along the roads on one side of which can be seen the mighty ocean, while on the other rise the crests of the coast range. One can travel through the fertile valleys of the Sacramento and San Joaquin—in reality one great central valley 500 miles long—and see the diversified resources and commercial enterprises. Or he can direct his course through the vineyards of Napa and Sonoma valley, north from San Francisco. If the trip lie to the south he may bowl along through the orchards of the Santa Clara valley where 6,000,000 fruit trees bear their wealth-giving burdens each year. Beyond the Tehachapi, if he so wills, he can visit the golden region in which the word stranger has been eliminated from the vocabulary, where the visitor is ever impressed with true Californian hospitality. Tiring of the beaten ways of the multitude, the motorist can journey into the high Sierras, whose eminences raise an encircling boundary along the eastern border of the state. Guiding his car toward the north, he can push forward into the big timber country, the home of the big redwoods, into the forests which nature still claims for her own. The Siskiyous at the northern line of the state afford him still another panorama if he penetrates further.

Fine California Roads

The tourist in California will be surprised at the excellence of California roads, especially in the mountains, though their conditions naturally depend upon the season, being best in the late spring and early summer.

If the wishes of Governor Gillett are followed the state will be bonded for $18,000,000 for the construction of good roads, running from the northern end of the state to the southern, and connecting all the county seats and important centers with laterals. The governor would build 3,000 miles of state highways on a uniform and comprehensive system. Good roads—or best roads, as some organizations style it—are the desideratum of many active organizations formed within the last few years.

In California, largely a sparsely-populated state, touring conditions are not the same as in Europe, where every stream, however small, is bridged, but to the enthusiastic motorist who uses his car as a means of bringing him into the realms where the beauties of California are to be seen in all their grandeur, it matters little that here and there a few fords have to be made or other small difficulties overcome, for to him who has truly entered into the spirit of the California of the poet such trivial inconveniences but add zest to the trip.

Editor's Note—The following story of a tour from San Francisco to Portland is by Arthur B. Watson, member of board of governors, Automobile Club of California.

From Frisco to Portland

Last summer the writer took a trip from San Francisco to Portland by way of Eureka, Humboldt county, and Crescent City, the county seat of Del Norte county, a trip offering magnificent scenery and fine roads as far north as the last named point. Taking the boat at San Francisco in the morning about 7 o'clock, the ferry carried the tourists past the bustling scenes of the waterfront of cosmopolitan commerce, out into the bay of San Francisco, which in its area of more than 400 square miles, comprises the finest harbor in the world. The boat passed close to the military prison on Alcatraz island and gave a view of the Golden Gate, the mile-wide entrance to the bay, gradually forging forward into the protected cove of Sausalito, where the yachts of San Francisco men of affairs lay quietly at anchor. The motor trip properly began at this point, Sausalito.

Emerging from the waterside the road led northward, first bringing us close to the foot of Mt. Tamalpais, the 2,600-foot summit of which is the rendezvous for weekly outing parties of thousands of city dwellers. Through picturesque Marin county the road led to the county seat, San Rafael, 15 miles from San Francisco. Thence they passed beyond into Sonoma county, touching Petaluma, the famous poultry and manufacturing center, and through the county seat, Santa Rosa, a thriving commercial center and the home of the horticultural wizard, Luther Burbank. Traversing the wide, level roads through the vineyards of Sonoma, they soon reached the more rolling country along the Russian river in Mendocino county, the road bringing them through Ukiah, the county seat. Thence they met with the first real climb of the trip into the wooded country to Willits. At this point they stopped for the night, having made in the first day 140 miles, a readily feasible journey.

Through the Mountains

The next day's trip took them into the mountains, where they climbed to an altitude of 5,000 feet. From Willits, Mendocino county, northwest to Eureka, Humboldt's county seat, the distance is 150 miles, a rather long day's trip considering the country traversed. However, the trip may be made by easy stages, for there are several places along the route where one could stop over night. The last 90 miles of this stretch of the trip were all down grade and through some of the finest redwood timber in the state. At the time a piece of road 10 miles long between Camp Fire and Rio Del was in very poor shape and had to be taken slowly.

Leaving Eureka the tourists paralleled the coast line for 100 miles, passing through the Humboldt county towns of Arcata and Trinidad, on a splendid road along the cliffs 500 to 1,000 feet above the Pacific ocean—a splendid trip from a scenic standpoint—turning inland now and then for a side trip through the redwoods. In mapping out this stage of the journey the tourist must bear in mind that he must reach the Klamath river, 75 miles from Eureka, at high tide, as the ferry cannot reach the shore at low tide. The last 25 miles of the stretch were entirely through large timber, except the last 4 miles, where they turned on to a hard-packed beach leading into Crescent City.

From Crescent City to Grant's pass, a distance of 95 miles, the road was very rough and most of the troubles were encountered on this stretch, which carried us over the line into Oregon. The road was found to be in very poor condition, though it was then being repaired and may be in better condition at the present time. The trip was a continual climb, there being one hill on the road 13 miles long that took 5 hours to cover on account of the ruts and boulders that littered the road for the whole distance.

Drive to Oakland, Ore.

The tourists drove to Oakland, Ore., to complete the next stage of the trip, that point being 91 miles beyond Grant's pass, through rolling country, slightly mountainous at times; the roads, however, were as a rule excellent. The next day they set out from Oakland, running into a few short stretches of bad road before reaching Cottage Grove, but from there down the beautiful Willamette valley the roads were good, though somewhat dusty. They made Salem, the capital, that day, having covered 138 miles.

Beyond Salem, as far as Oregon City, the road proved to be exceedingly dusty and filled with ruts, but from the latter city into Portland, 53 miles distant from Salem, the road was in excellent condition at that time.

Looking back over the journey, it is of interest to note that outside of the trip from Crescent City to Grant's pass the travelers had no difficulty whatever, and the only discomfort experienced even on that part of the road was the slow, tedious driving. Once or twice they struck the fly wheel, but were thankful to find that no damage had been done. Until the Willamette valley was reached the trip was through rather wild country, but the motorist who knows his machine and is at all resourceful should find no difficulty whatsoever on the trip.

Legal Lights and Side Lights

GIST OF BAY STATE LAW

MOTORISTS in Massachusetts are beginning to familiarize themselves with the new motor law passed by the last session of the legislature because several important sections go into effect in a few days. One of the most important is that all fines go to the state. This will check grafting town officials. The sections relative to registering cars are not operative until next January, when the sliding scale based on horsepower becomes effective. One of the provisions that goes into effect July 1 is that relative to brakes, for all cars of 10 or more horsepower must then be equipped with at least two brakes, powerful in action and separated from each other, one brake to act directly on the driving wheels or on parts connected with driving wheels. Each brake must suffice alone to stop the car within a reasonable distance. One brake must be a foot brake. Every motor cycle, too, must have a brake. The section requires also that every vehicle shall have a muffler, bell, horn or other means of signaling, lamps, and lock or ratchet brake to prevent the vehicle from being set in motion by unauthorized persons. Another change refers to lighting, and now instead of being allowed an hour before and after sunset to run without lights the time is changed to 30 minutes. Every motor car must show two forward white lights, and one red rear light, and the rear numbers must be illuminated. The numbers need not be painted on the sidelights, as in the old law.

The motorist will find that the new law puts upon him greater responsibility relative to the use of the highway. First if he is passing any draft animal and it appears frightened he must slow down without waiting for a signal from the owner, and if signaled he must stop. When nearing a street car that has stopped to let passengers on or off he must slow down and stop if necessary. When approaching a pedestrian who is on the street, or approaching an intersecting street or curve he must slow down and blow his horn. This part of the law also requires drivers to make square corners in turning. The signaling to pedestrians is expected to create considerable din in the city streets. The speed limit section going into effect is not very different from the existing law.

One of the most important parts of the law from the motorist's point of view, and important also to the cities and towns, is section 17. Under this section every local regulation excluding motor cars from streets, or making special speed limits, except the local regulations of the island of Nantucket and those of the Metropolitan park commission, becomes null and void, and the local authorities are required to remove forthwith all signs and notices relating to the speed, operation and use of motor vehicles. The effect of this provision is to put the entire state, with the exceptions noted, under the state limits of 20, 15 and 8 miles an hour.

If the local authorities believe that special regulations excluding motor cars or limiting their speed are still necessary, they may pass them, but they will not have any effect until they have been published in newspapers, posted at points affected, and, most important of all, until they have been approved by the highway commission as consistent with the public interests. No regulation will be valid which excludes motor vehicles from any state highway or from any main highway leading from any city or town to another. This part of the law gives the motorists the opportunity to protest against special regulations, which they consider onerous, without being under the necessity of preparing the elaborate protest required by the old law. Its effect, further, will be to bring about uniformity throughout the state in the matter of speed limits.

The highway commission has not yet given much attention to the question of how it will determine the horsepower of motor vehicles for purposes of registration next year, but it seems likely that it will use the A. L. A. M. formula, which seems to be the best available.

The fees for next year are $2 for a motor cycle, $5 for a truck or other commercial motor vehicle, $5 for motor cars of less than 20 horsepower, $10 for motor cars of 20 and less than 30 horsepower, $15 for motor cars of 30 and less than 40 horsepower, $20 for 40 and less than 50 horsepower, $25 for 50 horsepower or more; for cars owned by manufacturers or dealers, $25 for five cars and $5 for each additional car; for motor cycles owned by manufacturers or dealers, $10 for ten cycles, for registration after October 1, one-half fees; for substituting the registration of a motor car for that of a vehicle previously registered, $2; for substituting the registration of a motor cycle for that of a cycle previously registered, $1; for original operator's or chauffeur's license, $2; for renewal of license, 50 cents; for examination of applicant for a license, $2; for additional copy of registration certificate, 50 cents; for additional number plate, 75 cents; for additional motor cycle seal, 50 cents. Free certificates and licenses may be issued to members of the foreign diplomatic corps. All licenses to operate will be for 1 year only, as is the case with certificates of registration. This in brief is the new motor law.

WISCONSIN'S NEW LAW

Following is an official copy of the Wisconsin motor registration law as it now stands on the statute books, following amendments by the legislature, which has just adjourned. The asterisks of course mean words stricken out of the former law and replaced by those following the asterisks.

Section 1. Section 1636-47 of the statutes is amended to read: Section 1636-47. 1. No motor car, motor cycle or other similar motor vehicle shall be operated, ridden or driven along or upon any of the public highways of the state, unless the same shall have been registered in accordance with the provisions of this act.

2—Application for such registration may be made by mail or otherwise to the secretary of state upon blanks prepared under his authority for that purpose. Blank applications shall be * * * kept in the offices of the county clerks throughout the state.

3—The application shall contain a statement of the name, place of residence and address of the applicant, with a brief description of the motor car, motor cycle or other similar motor vehicle, including the name of such vehicle, the number, if any, affixed by the maker, the character of motor power and the amount of such motor power stated in figures of horsepower and with * * * each application shall be deposited a registration fee * * * as hereinafter provided.

4—The secretary of state or his duly authorized agent shall then register in a book to be kept for that purpose the motor car, motor cycle or other similar motor vehicle described in said application, giving to such motor car, motor cycle or other similar motor vehicle a distinguishing number, and shall thereupon issue to said applicant a certificate of registration * * * which shall contain the name, place of residence and address of the applicant, the registered number assigned, the date of registration and a brief description of the motor car, motor cycle or other similar motor vehicle so registered. * * * Said certificate of registration shall always be in the possession of the operator or firmly attached in some accessible place in the motor car, motor cycle or other similar motor vehicle described therein.

5—There shall be paid to the secretary of state for the registration of each motor car a fee of $2 and for the registration of each motor cycle a fee of $1.

6—All certificates of registration of motor vehicles heretofore issued shall continue in force for 90 days after this act shall go into effect, but every owner of a motor vehicle so registered shall reregister such motor vehicle in accordance with the provisions of this act before the expiration of said 90 days, and pay the sum of $1 to the secretary of state for such reregistration.

7—The secretary of state shall * * * issue and deliver to * * * each owner of a motor car an official number plate * * * of uniform size and design, containing in 3-inch arabic numerals, followed by the letter "W," the distinguishing number so assigned to said motor vehicle, which said number plate shall be placed in a conspicuous place on the rear of such motor car or other similar motor vehicle and be so kept and displayed at all times where the same can be readily and distinctly seen.

8—The secretary of state shall also issue and deliver to each owner of a motor cycle an official number plate of uniform size and design, which shall have displayed thereon the initial letter of the state and the number assigned to such motor cycle, such letter and figures to be at least 1 inch high, securely fastened thereto.

9—Upon the sale of such a motor car, motor cycle or other similar motor vehicle said certificate of registration and number plate * * * shall be returned to the secretary of state and the new owner shall make application for a certificate of registration and number plate and pay the fee of $2 in the manner hereinbefore provided.

10—* * * Record of all applications and * * * certificates issued * * * shall be kept by the secretary of state at his office and shall be open to the inspection of all persons during reasonable business hours.

11—Upon satisfactory proof of the loss or

destruction of any certificate of registration or numer plate, the secretary of state shall issue a duplicate thereof to the owner of such motor car, motor cycle or other similar motor vehicle, upon the payment of a sum not exceeding $1 to cover the cost of such duplicates.

Section 2—Section 1636-48 of the statutes is amended to read: Section 1636-48. 1. Every manufacturer of or dealer in motor cars, motor cycles or other similar motor vehicles may, instead of registering each motor car, motor cycle or other similar motor vehicle owned or controlled by him, make application upon a blank * * * furnished by * * * the secretary of state for a general distinguishing number, * * * and said secretary of state shall, * * * issue to the applicant one certificate of registration, containing the name, place of business, * * * address of the applicant, * * * general distinguishing number * * * , and shall also issue and deliver to such applicant an official number plate in quadruplicate of such design as said secretary of state shall determine.

2—All motor cars, motor cycles or other motor vehicles owned or controlled by such manufacturer or dealer, except those for his own private use, shall, until sold or let for hire, be regarded as registered under such general distinguishing number, * * *

3—Any manufacturer or dealer who shall knowingly permit the use of any such number upon any motor car, motor cycle or vehicle owned or controlled by any other person shall be punished by a fine of not less than $10 nor more than $25.

4—It shall be the duty of every manufacturer or dealer aforesaid to notify the secretary of state of any change in his address or firm name.

5—The fee for such registration * * *, together with the four distinguishing numbers * * *, shall be $5 for each garage.

6—Additional duplicate general distinguishing numbers * * * may be obtained by any such manufacturer or dealer upon application to the secretary of state and the payment of an additional fee for each additional duplicate of not exceeding $1 to cover the cost thereof.

Section 3—This act shall take effect and be in force from and after its passage and publication.

NON-REGISTERED CARS OUTLAWS

The full bench of the Massachusetts supreme court handed down a decision at Boston last week that is of much interest to motorists throughout the country, as it establishes the status of cars that are in a state beyond the time allowed for registering, and which have not been registered. According to the decision cars that are not registered as the law calls for, are outlawed and are trespassers without rights other than that of being exempt from wanton or wilful injury. The decision, too, while it does not say so in so many words, upholds the legality of the law relative to registering cars, which many motorists have believed unconstitutional. The decision came as a result of a suit brought by E. L. Dudley, of Bridgeport, Conn., against the Northampton street railway, the plaintiff suing for $10,000 damages as a result of a collision between one of the railway cars and his motor car at Mt. Tom, September 29, 1905. Mr. Dudley reached Massachusetts on September 13, 1905, and the time had passed allowing him to use his car without being registered, so he was operating his car in violation of the law. In the superior court Judge Brown ordered a verdict for the railway company, but Mr. Dudley's counsel filed exceptions. His exceptions are overruled and the text of the supreme court's decision is as follows:

Section 3 of the acts of 1903, chapter 473, ordains that "except as otherwise provided herein no motor car or motor cycle shall * * * be operated upon any public highway * * * unless registered as above provided." This provision, in addition to the penalties fixed for any operation of unregistered machines, forbids their being operated upon the highway at all. We cannot avoid the conclusion that it was intended to safeguard persons who were lawfully using the highways from serious risks of injury by machines of this character which were operated in defiance of law, and the owners of which furnished no means by which they could be identified and compelled to make proper compensation for the injuries which by their violation of law or by their mere negligence they might cause to other travelers.

The legislature in the opinion of a majority of the court intended to outlaw unregistered machines, and to give them, as to persons lawfully using the highways, no other right than that of being exempt from wanton or wilful injury.

The plaintiff as a mere trespasser upon the highway was there not only against the right of the owner of the soil and so liable to an action by him, but also against the rights of all persons who were lawfully using the highway. He was violating a law made for their protection; accordingly, he was a trespasser as to them. It follows that the defendant which was lawfully using the highway with its cars owed to the plaintiff no other or further duty than that which it would owe to any trespasser upon its property, that in not the duty of ordinary care, as those words are commonly used, but merely the duty to abstain from injuring him by wantonness or gross negligence.

IS DOUBLE TAXATION

The supreme court of Ohio has just decided that the assessment of a motor car license in addition to the state license is unconstitutional. It is declared that this constitutes double taxation and is therefore illegal. The decision is of much interest to car owners everywhere, since it settles for all of Ohio the question of whether both the state and the municipality can assess a license fee. Other municipalities have awaited the decision of the supreme court before passing ordinances ready drawn to compel motor car owners to take out a city license. It has been the contention of motorists from the start that to ask for the payment of both a city and state license was contrary to the basic principle of taxation and would not stand the test of the supreme court. In the lower courts Frisbie of Franklin county, representing the motorists of the whole state, was defeated. Cases of exactly similar nature in Hamilton county—Cincinnati—and Lucas county—Toledo—having been decided adversely to the motorists of those cities, the Automobile Club of Cincinnati taking especial interest in the matter on behalf of the owners decided to carry the matter up to the supreme court for a final decision as above stated.

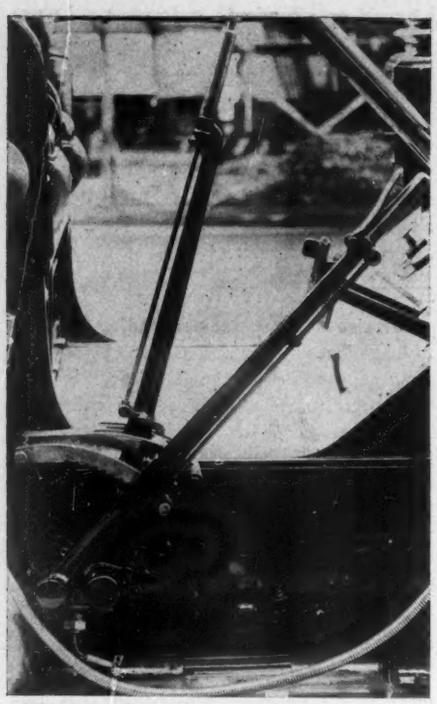
When taken to the supreme court an injunction was allowed prohibiting collection of the tax until the case could be heard finally. By the decision now reported this injunction is made permanent. In its syllabus the court says: "The ordinance of the city of Columbus, O., passed March 20, 1905, to license and regulate the use of the streets by persons who use vehicles thereon, in so far as it applies to motor vehicles, was annulled by the act of the legislature passed April 2, 1906, and was not revived by the repeal of that act by the act of May 9, 1908. The legislative act of April, 1906, referred to was the first act of the general assembly placing a state tax on motor cars. It was so commonly considered unconstitutional that no attempt was made to enforce it. It was repealed by the subsequent act of May, 1908, when the present law regulating state licenses was enacted. Both acts made useless the force of any city to assess a city license on motor car owners. The remainder of the ordinance of 1905 is not affected by the supreme court decision, since the state asks no license from owners of the other vehicles."

STRICT IN DENVER

Strenuous regulations regarding the running of motor cars and motor cycles have been adopted by the Denver fire and police board, and as a result there has been a noticeable decrease in reckless driving. Two licenses were revoked last week because the owners crashed into each other and wrecked two cars. The taxicab companies have been warned that if any of their cars are run in excess of the speed limit the chauffeur's license will be revoked and also the license for the car and it will have to be taken out of service. The board also ruled that licenses would be revoked on complaint of private persons, as well as those of the city police if the complaints were substantiated before the board. Women will not be exempt from arrest when caught speeding. During the past 10 days over 50 motorists and motor cyclists have been haled into court and in the majority of cases they have been given fines ranging from $25 to $50. By July 1 every motor car and motor cycle in Denver will be required to have a number both in front and rear. The penalty for not conforming to this rule will be as heavy as if a violation of the speed law had been made. A special meeting of the board of governors of the Denver Motor Club was held last Saturday, and Judge Grant L. Hudson employed as attorney for the club to defend all members who may be arrested unjustly.

NEW BILLS IN DETROIT

A series of motoring accidents in Detroit has been followed by the introduction in the common council of two measures, both fathered by Alderman Rutter who, needless to state, is not a motorist. One of these provides for a maximum speed of 4 miles an hour in the central section of the city, taking in approximately a square mile. The second provides for the licensing of all chauffeurs, each one of these being compelled to pass an examination in both mechanical knowledge and in the rules of the road and the local and state ordinances. The fee in the latter case is made $2 for the issuing of the license and 50 cents for each renewal. It is needless to state that the new ordinances will meet with a determined fight from the motorists, who believe that the present local regulations come as near the ideal from both the standpoint of the owners and users of cars and from that of the pedestrian public. Therefore, they want them to stand.



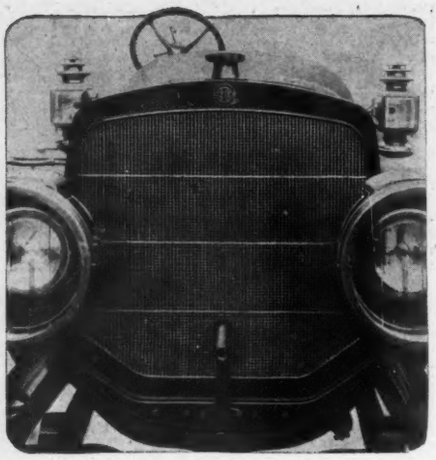
CHANGE-SPEED AND EMERGENCY BRAKE LEVERS ON 1910 LOZIER CARS

THE Lozier cars for 1910 will be but an evolution of the 1909 type with a few more or less important improvements included. The Lozier Motor Co. has during this season and will again during the next build three types—two six-cylinder models and a four. The light six with a 33-horsepower rating was brought out this year and differs from preceding Lozier cars in many respects, among which might be noted having both intake and exhaust valves on the same side of the cylinders, using a crankcase-contained lubricating system, and the employment of tubular sub-frame members for carrying the motor and gearbox. The big six is continued practically without change. The four-cylinder car has been altered by increasing the cylinder diameter ⅛ inch so that now the sizes are 5⅜-inch bore and 5¼-inch stroke. The big six-cylinder car has the motor the same as this year, the cylinder measurements being 4⅝ by 5½ inches.

From a constructive point of view, one of the important changes used on the four-cylinder and the big six models, is a new transmission box made in one piece instead of being divided into upper and lower halves, as at present. This is illustrated herewith, with the large cover plate removed, giving access to all of the gears and the main and countershafts. Making the gearbox in one piece instead of two increases its oil-retaining properties. The main and countershafts carried on ball bearings are supported in the ends of the case and cover plates are used to prevent the leaking of oil at these bearings.

Quadrant Is Redesigned

A further important change, in conjunction with the transmission of the car, is the redesigning of the quadrant for the



NEW LOZIER RADIATOR

gear-shift lever. The lever now gives first and fourth speeds when moved in the same slot—first speed at one end and fourth speed at the other. Second and third speeds are obtained in the other slot. As these cars have direct drive on third speed, it is possible to drive almost 95 per cent of the time on second and third speeds and so there is little necessity of having to operate the change speed lever except in one slot. The low speed in these cars is intended for heavy sand traveling, as well as climbing abnormal grades, and the indirect fourth is geared for speeds above 60 miles an hour. The levers are steel and not bronze, as at present. A further change has been made in the shape and speed of the transmission gears, which has reduced the noise of the fourth, or racing gear.

Externally, one of the biggest changes in the Lozier is the adoption of a square-tube, honeycomb-type radiator instead of the round-tube type of former years. This change considerably alters the front view of the car. In all models the general use of ball bearings is continued as heretofore. In the four-cylinder and big six models the annular ball bearing is used as much and perhaps more than in any other American-made car, these bearings being used for the crankshaft, camshaft, magneto and pumpshaft, clutch, transmission, rear axles, front wheels, and steering gear.

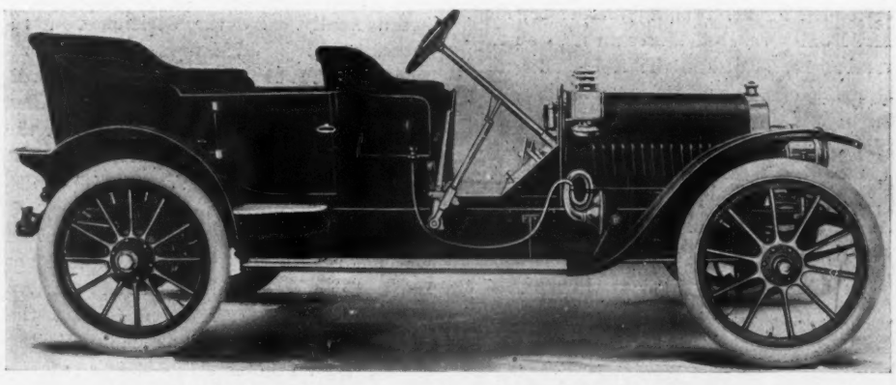
As already mentioned, the Lozier small

Three of the New

six differs considerably from the four-cylinder and big six type. It uses the L-type cylinder with intake and exhaust valves on the left side where they are operated from a single camshaft inclosed in the crankcase. The cylinders are 3¾ by 4½-inch, bore and stroke respectively, and have a rating of 33 horsepower. This motor has incorporated within it a new oiling system in which a worm pump is located in an oil well in the bottom of the crankcase. The oil is driven through interior channels in the crankshaft and other parts directly to the surfaces to be lubricated, and all surface oil returned to the oil well whence it is filtered and recirculated. This car further differs from the four and six-cylinder types in that it uses a three-speed selective gearset with direct drive on the third speed. It does, however, agree with its bigger brothers in the employment of the Lozier platform spring suspension in the rear, multiple-disk clutch, and shaft drive with full floating rear axle. The car has a turning radius of 35 feet. Final drive is by propellorshaft with one universal joint located at the forward end and immediately in rear of the gearbox. The differential case is of pressed steel construction. Brakes are all on the rear wheel, the pedal-operated ones being of contracting type.

The Lozier Big Cars

In the four-cylinder Lozier, as well as in the big six, the multiple-disk clutch consisting of thirty-three hardened and ground disks of saw-blade steel, is continued. This clutch is inclosed and operates in oil. A full type floating rear axle is employed on both models, as well as a propellor shaft with but one universal as used in the small six. The propellor shaft is inclosed in a tubing which is supported from the cross member of the frame at its forward end. Radius rods are fitted with ball-and-socket terminals at both ends. The upper half of the differential case may be removed through the tonneau floor without removing the car body, and the entire differential set may be also re-

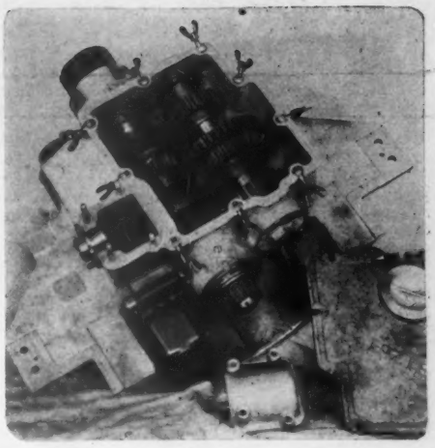


THE 1910 LOZIER SMALL SIX TOURING CAR

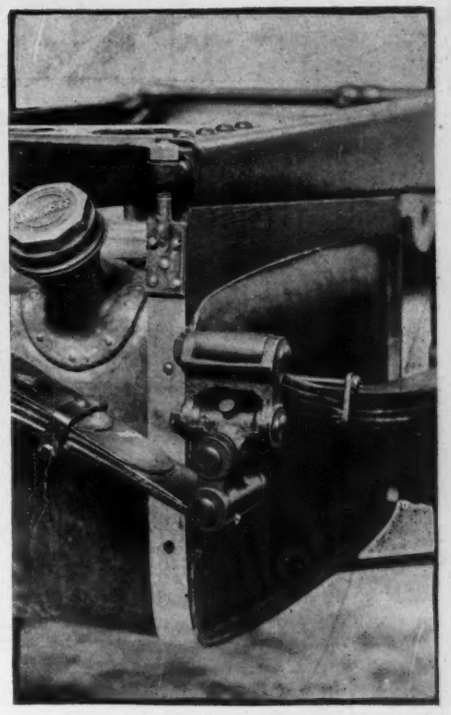
Lozier Models

moved through this same opening. Both sets of brakes operate on the rear wheels, thermoid being the friction material used. Each set is fitted with long lever equalizers and has quick adjustment hand nuts provided.

The lubricating system in these large models is entirely by splash due to the general use of ball bearings in the motor. A multi-feed pump is gear driven from the camshaft and delivers oil to the compartments of the case, the oil for the pump being drawn from a 3-gallon reservoir on the chassis. There are two ignition systems—the major one comprising a Bosch magneto and the minor one storage battery, non-vibrator coil and distributer. Two sets of plugs are used.



NEW LOZIER ONE-PIECE GEARBOX



THE LOZIER GASOLINE TANK SUSPENDED BENEATH REAR OF FRAME

PREST-O-LITE TUBE

The Prest-O-Lite Co., Indianapolis, Ind., has brought a new addition to its line, known as the Prest-O-Lite tube, which is a little tube a foot long, 1¼ inch in diameter and weighing 1 pound, and which it is claimed contains enough carbonic gas to inflate a 36 by 5-inch tire to high pressure in a moment. All that is necessary to do with the tube is to turn the valve. The idea of these tubes is presumably to be used in a car on a day's tour instead of carrying the larger tank. The Prest-O-Lite tube is a particularly handy little device and is intended to supplement a regular tire tank.

U. & H. MAGNETOS

The J. S. Bretz Co., New York, importer of the U. & H. high-tension magnetos, announces that three improvements are in place on these magnetos for next year. The first of these is the U. & H. interrupter, which is designed to eliminate wear. It permits of no adjustment and is permanently set at the factory, so that once in the hands of the user there is no possibility of any false adjustment. The second improvement is the adding to the magneto of a battery timer at the end of the distributer shaft, the timer being advanced and retarded with the interrupter. The third improvement lies in the construction of the distributer, which has been designed with the idea of preventing the insulation being burned by the high-tension spark when the motor is started on the battery switch. The distributer segments are set in a floating ring, which follows the spark advance and retard, but when retarded for starting the brush always touches the correct segment.

LANCASTER BREAST DRILL

The Lancaster Machine and Knife Works, Lancaster, N. Y., has brought out a new No. 50 breast drill, which differs from others of its class in that the drill is held by means of an oval taper from chuck and shank, which being lathed-turned are an absolute fit. The claimed advantage of this method of holding drills lies in the simplicity and absence of wear. The drill is nickel-plated. It is also made with two-jawed chuck with forged-steel, alligator jaws.

KEYSTONE GREASE TESTED

An interesting test was made of Keystone grease, the product of the Keystone Lubricating Co., Philadelphia, Pa. The Olsen testing machine was employed and pressure increased by steps of 86.2 points per square inch up to the high maximum pressure of 431 pounds. A full 60-minute run being made at each pressure. During the entire run at each pressure the lubricant maintained fluid friction between the journal and the bearing and withstood the temperature rise without a sign of any disintegration, such as oils and greases of animal or vegetable origin are liable to on account of their readiness to decompose. The test showed that the grease did not squeeze out of the bearing or soften by heat and flow away from between the surfaces required in lubrication.

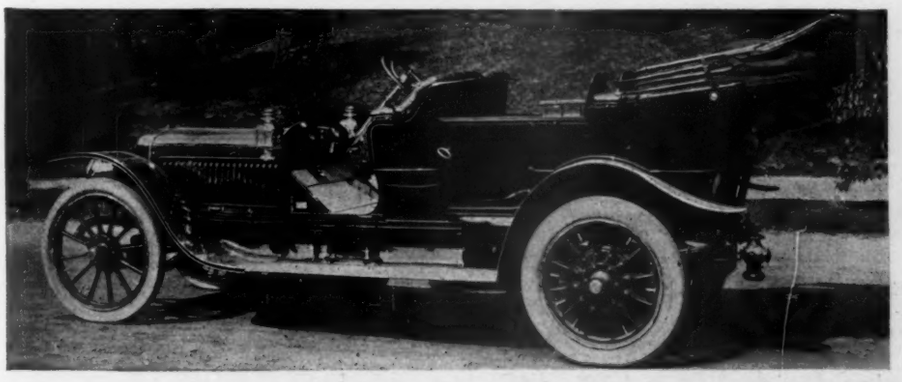
MOTOR CAR LITERATURE

A feature of the No. 11 Reo Echo is the opening story on "Everybody's Runabout," by William Blair, M. D., a pioneer Michigan motorist. The story contains tabulations showing the cost of operating the car as well as maintenance extending over a period of 3 years. The advantages of the motor car for physicians' use as compared with horse-driven vehicles is clearly set forth in the story.

The Continental Caoutchouc Co., of New York City, is sending to every club member throughout the country a buff-colored folder containing five photographs showing the different operations necessary in removing and replacing a deflated tire on Continental demountable rims. This folder also contains tesimonials from users of Continental rims.

The Peerless Motor Car Co. has combined its 1909 parts and instruction books, the instruction portion occupying the first thirty-one pages, and the remaining thirty-three pages devoted to parts.

The present catalog of the Buckeye Mfg. Co., Anderson, Ind., illustrating Lambert cars, is unique in that the top of each page is devoted to an illustration—either the factory or car—and beneath which is a broad band containing the words, "The Lambert." The remainder of each page beneath this band is devoted to specifications, illustrations and descriptions of its cars.



THE 1910 LOZIER BIG SIX TOURING CAR

The Readers' Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

INSTALLING MAGNETOS

DECATUR, NEB.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me of the best and cheapest way to install magnetos on old two and four-cylinder cars using dry batteries in series of two sets with a double switch, using dash coils. Is there any magneto manufactured with a self-contained commutator or timer that attaches direct to spark plugs without the use of coils, and is a success?—Decatur Auto Co.

The cheapest type of magneto to install in a case of this kind would be one of the inductor type driven by friction from the motor and which magneto would simply take the place of one of your sets of dry cells and would be wired the same as your dry cells. Magnetos of this type are manufactured by two or three concerns at the present time. There is no magneto made with a contained timer or commutator, but in all strictly high-tension magnetos there is a contained distributor so that all the wiring necessary are four wires to the plugs from the magneto and one to the switch. These high-tension magnetos have in the majority of cases two windings on the armature—one primary winding consisting of a comparatively few turns of fairly coarse wire and the other the secondary consisting of a great many turns of very fine wire.

CRITICIZES PATHFINDER'S ROUTE

Hanover, Pa.—Editor Motor Age—I noticed an article in Motor Age, issue June 10, page 16, entitled "New York-Atlanta Good Road Scouts," by Pathfinder. On page 17 in a part of that article reference is made to the road from New York to Abbottstown and from there to Gettysburg, a distance of 15 miles, as being very rough. One cannot help but regret that the highway to one of the greatest places of interest in the country should be so neglected. I beg to call your attention to the fact that had Pathfinder turned to the left in Abbottstown and gone from there to Hanover, which is quite an historical spot, being the place at which the first fight on free soil took place during the late rebellion, and marked by an equestrian statue located in the center of the town erected by the state of Pennsylvania, and from there to Littlestown, he would have found a fine road; in fact, there is none better in the country. From Littlestown to Gettysburg the road is very fair. The distance by this route is 8 miles further than by the direct route from Abbottstown to Gettysburg, but this additional distance can be made quicker than by the most direct route, for the reason that the roads are far better. I would thank Motor Age to refer this to the party who wrote the article. All motorists coming from Philadelphia, Lancaser or York, should take the route as herein laid down, in preference to the shorter route which the Blue Book gives. I have called the attention of the publishers of the Blue Book to this route, but too late to be inserted in this year's issue, but am advised it will be given attention in the 1910 issue. —H. E. Young.

GASOLINE MOTOR IN WHITE CARS

Polo, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me if a gasoline motor can be installed on a White steamer, model H, using the White transmission? If so, kindly explain the installation of same.—John P. Miller & Sons.

It would be impossible to do this. There is no clutch in the White transmission, it simply giving two forward speeds and a neutral without any reverse. Every time you change speeds on a White steamer it is necessary to shut off the motor, or in other words stop it. This is no trouble in a steam car, but it would be impossible in a gasoline machine. The transmission without a reverse would be useless in gasoline practice although alright in a steam car because the steam engine can be reversed.

HANDICAPPING A RACE

Lewiston, Mont.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give some rules and state how to govern a handicap road race. We contemplate such a race and are desirous of handicapping according to power of machines.—F. E. Doran.

By handicapping is ordinarily meant giving one contestant a time allowance over another or causing him to carry extra load. In motor car road racing no handicapping of this nature has as yet been done. Handicapping has been avoided by the method of classification in that it tends to put all cars of approximately the same power in the same class. Results have shown, however, that this has proven a failure, yet no handicapping scheme on either weight or time has been evolved. Perhaps the best classification is on piston displacement, that is, letting the contending cars have the same cylinder volume. In the western stock chassis races of last week the small cars were allowed a maximum piston displacement of 300 cubic inches, which was slightly larger than 4½ inches square, and the large cars 525 cubic inches, or approximately 5½ inches bore and stroke. It would not be satisfactory to classify on horsepower as determined by any formula as motors vary too much in such ratings and at different speeds. With piston displacement the amount of mixture taken into the cylinders is the criterion and the motor that can make the most out of that volume is the best.

BELLEVILLE-INDIANAPOLIS ROUTE

Belleville, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me the best route from Belleville to Indianapolis? Also the distance covered.—A Subscriber.

A route from Belleville to Indianapolis is by way of Shilo, Lebanon, Trenton, Carlisle, Sandoval, Odin, Salem, Flora, Noble, Olney, Lawrenceville, Vincennes, Bruceville, Oaktown, Carlisle, Paxton, Sullivan to Terre Haute. Thence from Terre Haute through Brazil, Reelsville, Putnamville, Mount Meridan, Plainfield to Indianapolis, a total distance of 279 miles.

REPAIRING FRONT WHEEL BEARING

Danville, Ill.—Editor Motor Age—Will Motor Age in its valuable columns advise a remedy for a plain bearing front wheel that heats so it will melt hard oil and graphite to running point. My axle seems to be in good shape and two different firms have worked on it but with no good result. One firm put in a new brass bushing. There is an oil well in the wheel and the oil seems to be well distributed. There seems to be no tight place nor does there seem to be too much play. Is there a firm who can change wheels to roller or ball bearings without expense of new wheels? My car is a Rainier 1905 model and gives perfect satisfaction barring the one wheel which has taken to heating this year.—S. H. Van Valkenburgh.

When fitting a new bushing to a wheel the spindle should first be removed from the axle, placed in a lathe, and tested to see if it is true, and if not true a slight cut taken off to true it up. Next fit the bushing in the wheel, then the wheel on the spindle. If the spindle is slightly bent or twisted the wheel may run free when the car is jacked up, but hard under a load. If a bushing is first fitted to a spin-

dle and then driven into the wheel, it will probably be too tight when again placed on the spindle. It would hardly be possible to alter the hub of a plain bearing wheel to take a set of roller or ball bearings; new wheels would be necessary.

REMEDY FOR PLANETARY SET

Michigan Bar, Calif.—Editor Motor Age—Will motor Age, or some of its readers, help me out in regard to my planetary transmission. It is about 8 inches in diameter, with three disks—a fiber one on the inner drum, a steel disk attached to the inner drum, and a disk fiber between the steel disk and outer drum. I packed the inner drum with hard Albany grease and graphite. The transmission is new and heats sufficiently to melt the grease, and enough grease leaks out around the sleeve onto the disks so that they slip on high speed. How can I get more power from the hand lever—by pressing the drums together and squeezing the grease out from between the drums or disks?—Charles R. Wilcox.

If you will clean the hard grease out of your transmission and replace it with cylinder oil your troubles probably will be at an end. If the transmission still slips after the cylinder oil has been put in add a little kerosene. The spider, on which the three little dogs that bear against the disk are supported, is usually threaded onto the shaft and locked in place with a set screw. On loosening this set screw it is possible to turn the spider in until the clutch is as tight as necessary. It is quite probable that your clutch is too tight already, hence the desire for more power in the lever. If this is the case loosen the clutch a trifle by backing the spider away from the disk or drum.

WASHINGTON TO CHICAGO

Washington, D. C.—Editor Motor Age—Through the Readers' Clearing House will Motor Age, or any of its readers, who may have knowledge from experience or otherwise as to the best route via motor car from Washington, D. C., to Chicago, be good enough to give me the benefit of their information. I seem unable to get information at this end. Some say to go via Gettysburg, Pittsburg, Cleveland and Toledo; others say go via Cumberland, Wheeling, Columbus and Indianapolis.—J. F.

A good route and one which was used by the Motor Club of Harrisburg in its recent reliability run from Harrisburg to Washington and return is as follows: Washington through Hyattsville, Autoville, Beltsville, Contee, Laurel, and Elk Ridge to Baltimore; thence from Baltimore west to Bedford via Cooksville, Lisbon, Poplar Springs, Ridgeville, Plane Four, Newmarket, Frederick, Braddock, Middletown, Boonsboro, Hagerstown, Championsville, Greencastle, Upton, Mercersburg, McConnellsburg, Ridge, Harrisonville, Reamers, Breezewood, Everett, Mt. Dallas, Bedford. The Bedford-Pittsburg stage is through Wolfsburg, Schellsburg, Stoyerstown, Jennerstown, Ligonier, Youngstown, Greensburg, Grapeville, Irwin, Jacksonville, Stewartsville, Turtle Creek, to Pittsburg. From this point to Cleveland the towns passed through are Allegheny, Rochester, Beaver Falls, Darlington, Petersburg, New Middleton, Poland, Youngstown, Girard, Niles, Warren, Chagrin Falls, Randall to Cleveland. Thence to Chicago via Toledo, the route takes the tourist through Dover, Elyria, Norwalk, Monroeville, Bellevue, Clyde, Fremont, Hessville, Lemoyne, Toledo, New Carlisle, La Porte, Westville, Valparaiso, Wheeler, Hobart, Hammond to Chicago.

AIR-VALVE TROUBLE

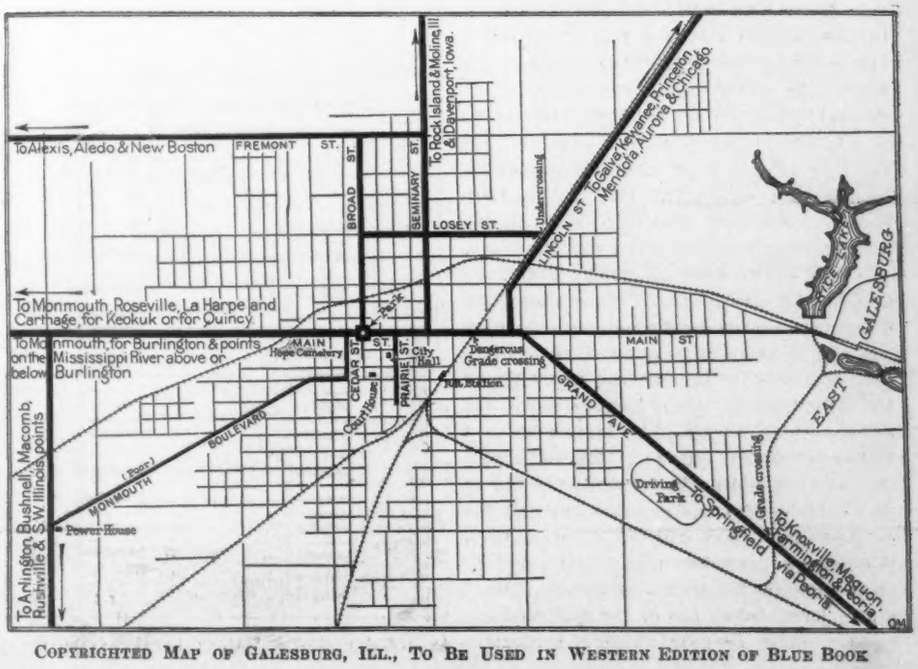
Morrisville, Pa.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me what is the cause of the following trouble: My friend has just overhauled his 1906 American Mors car and can get about 35 to 40 miles an hour out of it, except that it will sometimes slow down to a sudden stop of its own accord. At times it will take a hill better than the level, but when throttled down will back fire through the carbureter. The car is fitted with a regular Mors carbureter, and the valves appear to be times all right and ground in.—F. F. Palmer.

Your trouble seems to lie in the air valve of your carbureter. If the air valve of the carbureter were to stick at certain speeds, say at the speed generally required for climbing hills, the mixture could be almost perfect; while for extremely high speed, the air valve being stuck, the mixture would be too rich—too much gasoline and not enough air; whereas at low speed the mixture would be too weak—too much air and not enough gasoline being admitted. This sticking of the valve may be due to an accumulation of dirt on the valve stem, the stem may bind for want of a little oil, there may be a notch worn into the stem, or an uneven bearing of the valve spring may cause it to bind in the guide. Then, again, the spring may have lost its tension, the adjusting nuts may have worked loose and altered their position, or the spring may require a litle stretching.

TOURING INFORMATION

Keene, N. H.—Editor Motor Age—In contemplating a motor trip from this point to Washington, the subject of the different state laws relative to motor cars passing through their limits has arisen. Will Motor Age inform me what arrangements are necessary and the expense in the states of Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland to the District?—C. C. Abbott.

In touring through the states mentioned you are exempt in Connecticut for 10 successive days if your own state number and initials are displayed, and in Massachusetts you are exempt for 7 days, providing the home tag is carried. In New York the home license tag is sufficient. In Pennsylvania a tourist is exempt 10 days if home state requirements have been complied with and proper home tag displayed; a non-resident applicant for registration or license must designate agent upon whom process can be served. In New Jersey it is necessary to secure from the commissioner of motor vehicles a license to tour for 8 days, or for four periods of 2 days each, and a power of attorney must be filed with the secretary of state to accept original process. In Maryland a motorist cannot tour without carrying its license tag.



COPYRIGHTED MAP OF GALESBURG, ILL., TO BE USED IN WESTERN EDITION OF BLUE BOOK

STUDYING THE DIFFERENTIAL GEAR

By Charles E. Duryea

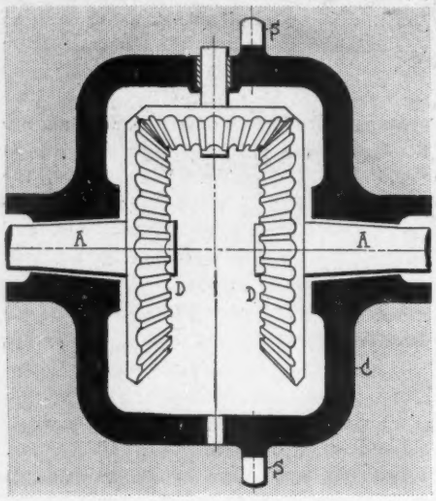


FIG. 1—BEVEL DIFFERENTIAL GEAR

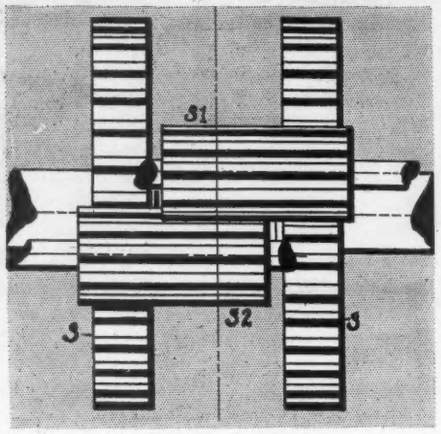


FIG. 2—SPUR GEAR DIFFERENTIAL

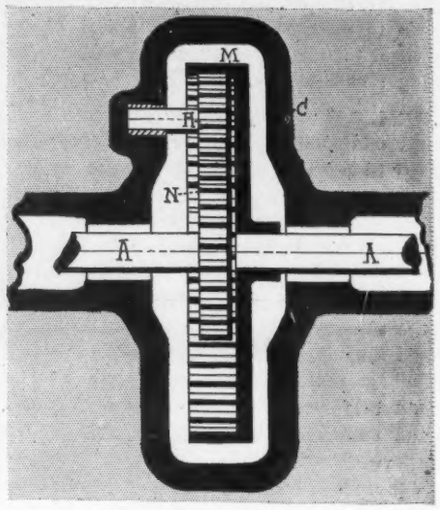


FIG. 4—INTERNAL GEAR TYPE OF DIFFERENTIAL

HORSE vehicles have wheels loose on the axles and therefore independent of each other and free to turn any sort of a corner without slipping. The earlier railway cars were so made, but to prevent the wheels wabbling and running off the rails they were fixed on the axle which was allowed to revolve. On this account railway cars must of necessity slip their wheels on the rails in turning corners, and to prevent an excessive amount of slipping railway constructors have to avoid bad corners. In motor car construction the driving wheels are usually connected to the same source of power by positive gears or shafts or chains so the wheels would be much the same as the solidly fastened wheels of the railway car if it were not for a provision commonly called a differential, which allows either wheel to run faster than the other and absorb more of the motion delivered from the engine, although at all times receiving only the same amount of push. The action of this device may easily be understood if we imagine a man taking a rod by its center and inserting the ends in the spokes at the top of the rear wheels of a vehicle. If he pushes forward on the rod he will drive both wheels with an equal amount of push. The rod acts as a balance beam and sends half of the push each way. But if one wheel moves faster than the other as in turning a corner, one end of the rod will move with it which is the same as tending to revolve around the man's hand. If we substitute a hub with spokes for the rod any revolution will simply bring other opposite spokes into engagement, and the man can apply power by following the mean forward movement of the vehicle wheels. To do this he soon begins to push downward, then backward, then upward and again forward; the rod or hub used by him having moved around the axis of the driven wheels. This is what the balance gear does and in its simplest, most common form it consists of a bevel pinion journaled on one of the spokes of the large sprocket or gear which is concentric with the rear axle. But since a small pinion manifestly cannot have teeth long enough to reach out to the drive wheel of the vehicle, we must provide wheels which it can engage and connect those to the respective vehicle wheels. To do this it is customary to provide rear axles in two halves, A and A, Fig. 1, on the outer ends being fixed the vehicle wheels and on the inner ends being large bevel gears D. The sprocket S and balance pinion are usually attached to a case C, which supports these half axles while permitting them to revolve freely. This case in turn is journaled to the vehicle so it may revolve as an axle when the course is straight. For strength and compactness the pinions are usually small in size but several in number. It is evident that several spokes of the sprocket can carry pinions, all of which will engage the same gears and distribute the work around the rims of the gears.

Bevel pinions and gears are not susceptible to quantity production as are spur gears

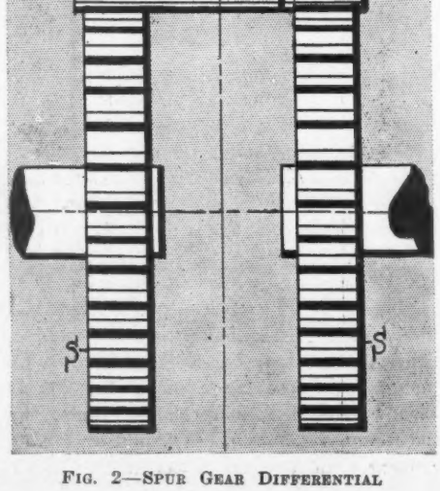


FIG. 2—SPUR GEAR DIFFERENTIAL

and pinion, so most balance gears are designed to employ the latter. This is easily done by fitting two spur gears S, Fig. 2, to the half axles and mounting in the sprocket case which carried the bevel pinion, two spur pinions, S2 and S1, with their axes parallel to the rear axle and so close together that they mesh with each other while one end of one engages one spur gear and the opposite end of the other engages the other gear. To keep the pinion which engages one gear from engaging the other it is stopped short of the other gear, so this design requires that the two gears be some distance apart as were the bevel gears. This form has more parts than the bevel form but they are cheaper to build. It usually has a little more back lash. It is customary in this also to secure strength by the use of several sets of pinions.

A modification of the spur gear form, Fig. 3, substitutes one or two gimbal joints G for the pinions and by placing the large gears D at an angle to the rear axle line A cause them to mesh one with the other. The case C which supports them and carries the sprocket S has to be made to suit of course. The cost of the gimbal joints G and the difficulty of producing angular work as compared with straight work is against this form and it is seldom used.

Another modification of the spur gear form once quite common on tricycles has but a single pinion N, Fig. 4, but uses one spur gear H and one internal gear M. This necessitates that the internal gear M be much larger than the external gear N so as to admit the diameter of the pinion H between the different lengths of radius. As used the internal gear M was about twice the diameter of the external gear N. The pinion sent half of the push to each of course, but as this power was applied to one vehicle wheel at only half as far from the axle as to the other it drove the one wheel but half as powerfully as the other. It was therefore clearly not a balance gear but more properly a differential. It was particularly

adapted to those tricycles wherein the steering wheel was at one side so as to have but two tracks and which on this account needed greater driving power on one side to avoid a tendency to skid the steering to one side if both wheels were driven alike. It was one of the ironies of fate that this device was used on a three-tracker while its main competitor, a two-track tricycle which ought to have had this device, used a balance gear.

A perfect balance gear without any gears has recently been brought before the public by H. M. Russell, of Wheeling, W. Va. On the half axles A, Fig. 5, are cranks B, one on each. The usual sprocket case C—with sprocket S—carries a pin J diametric to the case but at right angles to the axis of the vehicle. On this pin is a ring D journaled so it may make nearly a half revolution on the pin and having its two free sides slotted at H to receive the crank pins. A peculiarity of the cranks B is that they are arc-shape and in certain positions lie concentric with the ring D, while their crankpins P are not parallel with the rear axle which is the main shaft in this case, but are radial to the center of the ring D and case C. The ring serves to send half the power to each crankpin P just as did the bevel pinion. A little thought will show that the ring will transmit no power when the crankpins P are moving lengthwise the slot H, as they will be when at right angles to the ring pin. A second ring therefore is placed inside the first and the slots are cut at an angle to each other, D1, Fig. 6. By this arrangement any position of a crankpin on one side must be met by the pin on the other side so the balance is maintained.

Regarding this device, Inventor Russell says, referring to Fig. 5: "Since the center planes of the slots H also pass through the center of the device it is plain that the mechanism will be removable, and the crankpins P, if they fit the slots H in one position, must fit them in any position which the cranks occupy. It is also clear that since the device is symmetrical that the cranks B if they move at all must have equal and opposite movement. Assume the cage C to be stationary and the right-hand crank B to turn towards the top, in direction of arrow X; this will tilt the ring out of its horizontal plane, and the opposite side of the ring will push the left crank B down in direction of the arrow Y, through the same angle as the right crank B took. This shows there is a perfect differential. It will be seen that when these cranks B have turned 90 degrees in the opposite direction, the ring D will be vertical in the illustration and a dead center will be the result. This has been overcome, as illustrated in Fig. 6, by using two rings D and D1, the latter inside of the former. This illustration shows the complete device, except that the dotted lines merely indicate the general position that will be occupied by the rings D and D1, which are held separate by washers W. Fig. 7 shows a top view of the ring D and it will be seen that the slots H, instead of being parallel to the axis of the oscillation of the ring are turned to an angle of 30 degrees of this axis; the effect of this is to make the dead center occur when the cranks are 90 degrees apart instead of when they are 180, as shown in Fig. 5. Fig. 8 is a cross section of the rings D and D1 and shows the relative position of the slots H in the two rings. It will be seen that these slots in one ring are placed somewhat like the threads on a double thread right-handed screw, while those in the other ring are placed like the threads on a left-handed screw. The effect of this is to make the dead centers of the two systems come 90 degrees apart, and so produce continuous rotation.

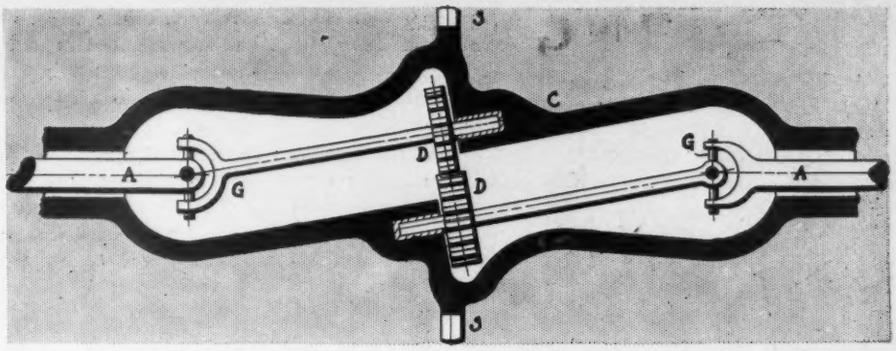


FIG. 3—DIFFERENTIAL GEAR WITH JOINTS G IN AXLE SHAFTS

There are still other forms but these are the simplest and most common of the type that while positively controlling the wheels of the vehicle send half the power to each at all times regardless of their respective movements.

A form that does not positively control the wheels is known as the ratchet or free-wheel drive. This, too, is built in many forms and from time to time new modifications of it are shown. In general the axle is one piece with the wheels journaled thereon as in carriage axles. The engine turns the axle and some form of pawl and ratchet causes the wheel to be driven. If for any reason the wheel runs faster than the axle the pawl under runs the ratchet, slipping from tooth to tooth and to all intent and purpose the wheel is free. This form is not well adapted to braking by the motor which is so desirable in a hilly country. In turning a corner, the outer wheel runs faster than the inner, so it runs free while the inner takes the whole power of the motor. This tends to speed up the vehicle in turning which, is a result just the opposite of the preferable one. For reversing the pawls are made to engage in a reverse direction by a reverse movement of the axle with respect to the frame of the vehicle. In some forms this reverse engagement cannot take place so long as the wheel is moving forward with respect to the frame, but in others it may engage and often results in a sudden stoppage of forward progress that strains the mechanism and is not pleasant to the passengers. This form has one great advantage over the type most used in that it drives the slower wheel and so is not liable to be stalled by one wheel slipping on a piece of ice as often happens with the other form, which, while pushing on both wheels alike may send all the motion to a single spinning wheel and fail to propel the vehicle. At high speeds, as in racing, this spinning of the wheels every time they bounce into the air is much like putting on the brake; and the ratchet form of drive would seem to be the best for this purpose. On the usual track or course the corners are not short and the disadvantages of this form would be less apparent. Many who have used this device in its latest form have been favorably impressed with it and the Hedgeland is now marketed by a prominent maker of parts.

E. J. Gould, of Boulder, Colo., has recently shown a form that seems to have the advantages of both the better known systems. It is positively in control of the wheels at all times, permits free and independent movement of them for all turning require-

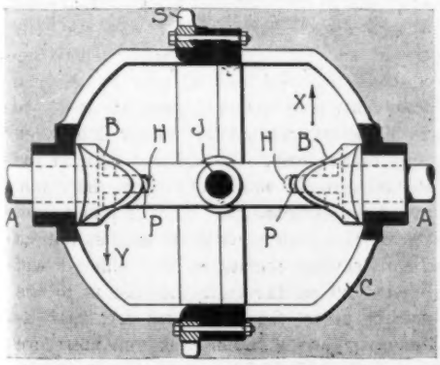


FIG. 5—RUSSELL'S GEARLESS DIFFERENTIAL

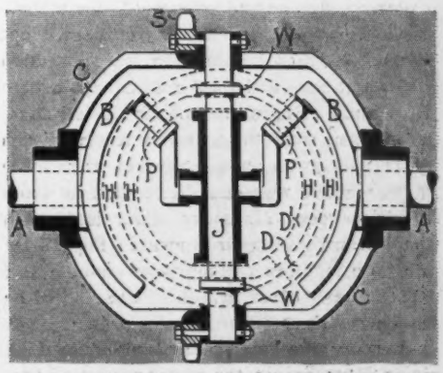


FIG. 6—RUSSELL'S GEARLESS DIFFERENTIAL

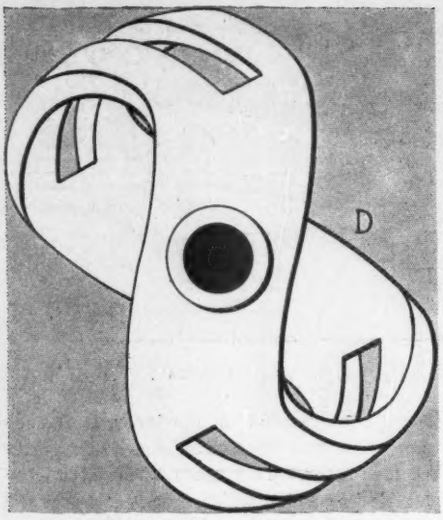


FIG. 7—TOP VIEW RUSSELL'S RING

ments and yet because of the use of eccentrics which are not very efficient means for converting reciprocating motion into rotary, it will not tend to spin the free wheel as does the most common type. Neither does it drive the inner wheel only as does the ratchet type but it will send most of the power to the slower wheel because of the friction within itself. And its construction is probably tse simplest of all. On each half axle A, Figs. 9 and 10, are twi rigid eccentrics B and C at 90 degrees to each other. From these run eccentric rods R to common pins P parallel to the rear axle and mounted in radial slots S in the sprocket case K which carries the two half axles as in the common forms. From the other two eccentrics B1 and C1, similar rods R1 run to these pins, the two sets being needed to avoid any inoperative point as was the case in the Russell device. Each eccentric rod R and R1 has at its inner end an eye hole large enough to take the eccentrics B and C and at its outer end a hole of sufficient size for the pin P. The motion is a little more complex than the usual geared form but the construction is so simple that it would seem likely that there will be a much larger use of these gearless forms in the future when cost of production is a matter of greater moment than at the present.

There have been in recent years a number of examples of friction drives without any balance gear. Most of these have had double drives so that one could slip and allow its wheel to follow the curve without the necessity of forcing the rear wheels to slip on the ground to the detriment of the tires and the straining of the parts. Most any form employing two friction driven disks will serve quite well this way. The Marble-Swift was one of the earliest and the Black, Fig. 11, is one of the latest. In the latter the two driven disks D and D1 are close together and look like a single disk unless closely observed. They are shifted as a single disk but one is splined to a shaft S carrying one sprocket and the other to a sleeve S1 carrying the other sprocket. The driven disks are not of wide face but one must be slightly farther from the center of the driving disk and so must tend to drive its wheel faster than the other, which necessitates a little constant slip to keep them even.

In the Holsman motor buggy, friction ropes or cables serve both as clutches and driving device and they must slip to allow turning. The salesmen have claimed that in turning the centrifugal force causes the body of the vehicle to roll slightly, which tightens one cable and loosens the other, but it would seem that to do this effectively the swinging countershaft would need to be considerably below the centers of the wheels and that the vertical spring action would in such a case be perceptible in its effect on the driving. In any event the vehicles are running in large number with much satisfaction to their users.

A number of inventors have attempted to secure the ideal result by fitting friction clutches to the rear wheels, which were connected with the steering mechanism in such a way that when going straight ahead the drive was positive to both wheels but that when the steering post turned the inner clutch would be partly or wholly released, letting the outer wheel drive while the inner ran more or less free. The complication of these has been against them. In the Duryea buggyaut this idea has been carried out in very simple but effective form. Here metal-to-metal roller friction drive, Fig. 12, is used and the front end of the power unit F is attached to the steering post S by a simple rod and eccentric E, so that the steering movement shifts it to the inner side, which loosens the left driving roller R from its contact with the driven ring A and tightens the right contact so that it may without slipping take the whole engine effort. For straight forward driving both rollers R are in positive contact and either wheel slipping on a piece of ice

FIG. 9—GOULD'S ECCENTRIC DIFFERENTIAL

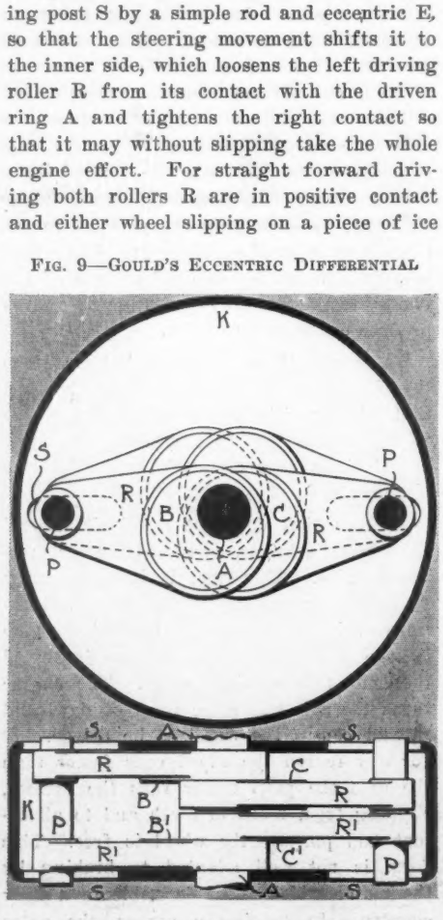


FIG. 10—GOULD'S ECCENTRIC DIFFERENTIAL

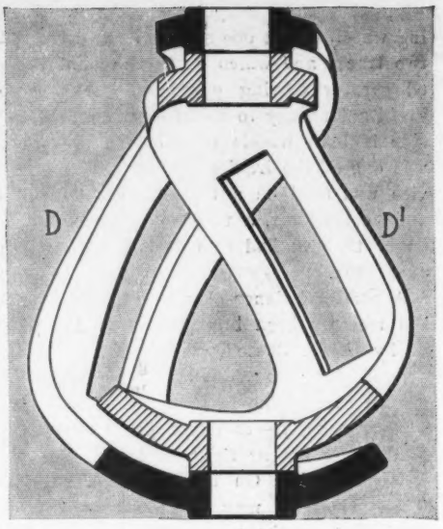


FIG. 8—VERTICAL SECTION OF RUSSELL'S RING

does not delay the progress of the vehicle because the other wheel takes the power and drives as a single driver until the slipping wheel is able to again get a grip on the ground.

One or more motor vehicles have been built with means for driving only one wheel. This method is only suitable for the best of roads and even then it is necessary that short turns be made with the driven wheel on the outside. The single-drive wheel slips badly, which causes skidding, is very hard on its tire and being on one side tends to cause the front end of the vehicle to veer to the opposite side.

There are a number of light tricars and package tricycles in use today which have but a single rear wheel. They carry a large part of the load on this wheel and being in the center it is not so objectionable as a single side-driver so that they get along quite well, without a balance gear. But in general the balance gear or some equivalent will be found necessary and will remain in motor car service. As an illustration of the lengths some will go to avoid so simple a device I may mention the five-wheeler built in Chicago some years ago in which the central wheel was the driver and being under the center of the load could be forced against the ground with weight enough to secure traction. Others have applied the single-drive wheel in other ways but the simple balance gear effect may be obtained so cheaply and reliably that these attempts seem ludicrous.

FRENCH TEST OF MOTORS

Paris, June 10—Numerically the lightweight motor competition organized by the Automobile Club of France has not been a huge success. Four firms were originally entered, but Robert Esnault-Pelterie having withdrawn his seven-cylinder engine and Amboise Farcot having failed to present his eight-cylinder motor, the only two engines to be put on the bench were an eight-cylinder air-cooled Renault and a seven-cylinder rotary air-cooled Gnome. The latter developed

certain defects during the trials, with the result that the Renault alone came out victorious.

The engine is one which was first presented to the public nearly a year ago, but has since been modified in many details, particular attention having been paid to cooling and lubrication. The engine, which has eight cylinders in V, placed at 45 degrees from the vertical, and having a bore and stroke of 3½ inches by 4 7-10 inches, was tested for two periods of 3 hours each at the club laboratory, the highest power developed being 59.93, at 1,844 revolutions a minute. On the first test, with the camshaft indicating 668 revolutions, the horsepower developed was 47.69, this being increased to 56.73 at 930 revolutions. On the second test the motor started at 897 revolutions, giving 58.30 horsepower, and was gradually increased to its maximum of 59.93 at 922 revolutions, the average power on this test being 58.816. Including all piping, gas and oil tanks, as well as the fuel consumed, the weight per horsepower of the engine was 3.41 kilogrammes—practically 7½ pounds.

Among the features of the engine are that the camshaft is utilized in place of the crankshaft for carrying the screw propeller. This, of course, gives a propeller running at half the engine speed without the use of reducing gear. As Wright already has proved, and Bleriot has further demonstrated, an aerial propeller of large diameter turning at 500 to 800 revolutions a minute gives better results on an aeroplane than a propeller running at the engine speed of 1,200 to 1,800 revolutions a minute. Naturally the camshaft is of much stouter construction than usual, and is carried in specially long bearings to withstand the strain to which it is subjected.

The cylinders, cast with their radiating fins, are bolted down to the crankcase by their heads, and not by the base, a crosshead receiving the four long bolts projecting from the crankcase for each cylinder. Cooling has been given close attention, and in this respect the motor has undergone several modifications since its first appearance. The method that is found to

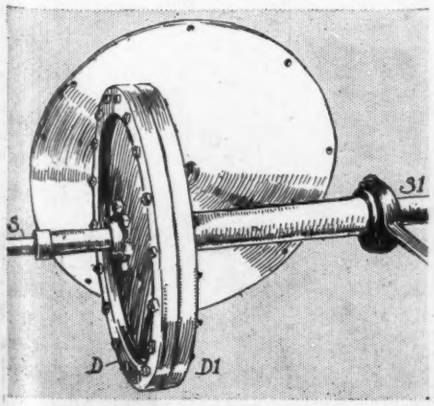


FIG. 11—BLACK'S SUBSTITUTE FOR DIFFERENTIAL

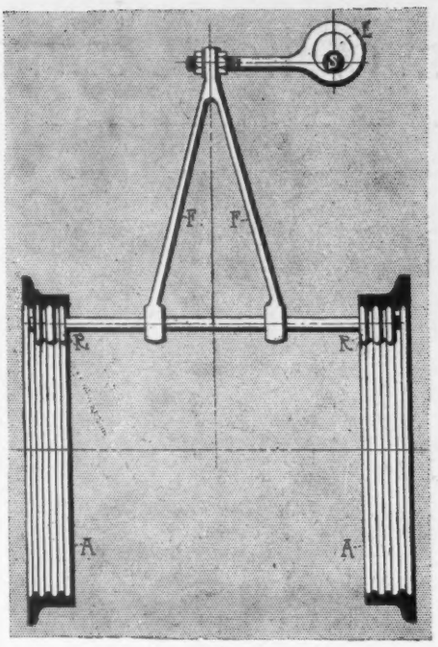


FIG. 12—DURYEA'S DIFFERENTIAL SUBSTITUTE

give greatest satisfaction is to enclose the heads, the two ends and the space between the cylinders, and to mount on one extremity of the mainshaft a powerful fan also enclosed in a sheet metal housing. The fan draws a strong current of air into the V-shaped chamber formed by the two rows of cylinders, from which it is impossible for it to escape except between the fins of the cylinders, thus effectively cooling the walls.

The inlet valves are in an outstanding pocket, operated from below, while the exhausts are immediately overhead and operated by rocker arms, all the exhaust valve mechanism being above the sheet metal housing. The carbureter, following general Renault lines, is carried very low, generally on a level with the base of the crankcase, in order to allow of a gravity feed when mounted on an aeroplane. The mixing chamber, however, is placed high up in the angle of the two lines of cylinders, and practically on a level with the cylinder heads. Lubrication is now of forced-feed type, the lower portion of the crankcase being an oil reservoir, from which the lubricant is pumped up to the main bearings, the camshaft bearings, and through the hollow crankshaft to the connecting rod ends.

The Renaults have also a light-weight four-cylinder water-cooled engine, which is especially constructed for aeronautical purposes. It is of original design and is about to undergo public tests soon.

PIERCE OFFICE IN PARIS

Paris, June 10—American owners of Pierce cars touring Europe have now at their disposition handsome central offices in the Avenue de la Grande Armee, Paris, where spare parts and all information concerning routes, touring regulations, etc., can be obtained at any time. The Pierce company's Paris touring office has been in operation for more than a year, but up to the present has shared office room with a French firm. Owing to the increased number of owners of Pierce cars touring Europe it has been decided to move into larger and self-contained offices, and the change took place this week. Manager N. F. Goodsill opening handsome showrooms at the corner of the Avenue de la Grande Armee and the Avenue de la Forge. This is the first time an American firm has been directly represented on the Paris row. N. F. Goodsill declares that present indications point to a larger number of Pierce tourists than on any previous year, the number up to the present having reported at the Paris offices being about fifty, although the touring season has hardly commenced. Most of the tourists this year are traveling on either the large six or the most powerful four-cylinder model.

LAMBERT PATENTS SUSTAINED

Boston, Mass., June 28—Some months ago the Lambert people instituted suit against the Waltham Mfg. Co. for alleged infringement of their friction-drive patent. The case was decided June 21. The following decision was given in the United States Circuit Court for the district of Massachusetts:

1—That the complainant—the Buckeye Mfg. Co—is the exclusive owner of the letters patent of the United States No. 761,384, granted May 31, 1904, upon application of John W. Lambert, for friction gearing, set forth in the bill of complaint; that the complainant is the owner of the entire right to recover damages and profits from infringers of said letters patent; that said letters patent is good and valid in law and has been infringed by the defendant herein.

2—It is further ordered, adjudged and decreed that the said defendant, the Waltham Mfg. Co., its officers, agents, attorneys, salesmen, servants and workmen be and hereby are enjoined for the remainder of the term of the life of said letters patent, from further infringing, or coöperating with any other person, firm or corporation in infringing, said letters patent, and from manufacturing, using, selling or coöperating with any other person, firm or corporation in the manufacture, use or sale of, friction gearing, or automobiles or other devices provided with friction gearing that contains or embodies the invention described and claimed in said letters patent.

3—It is further ordered, adjudged and decreed that the complainant recover from said defendant the sum of $1,000 for the damages which the complainant has sustained by reason of said infringement by the defendant and the profits gained thereby.

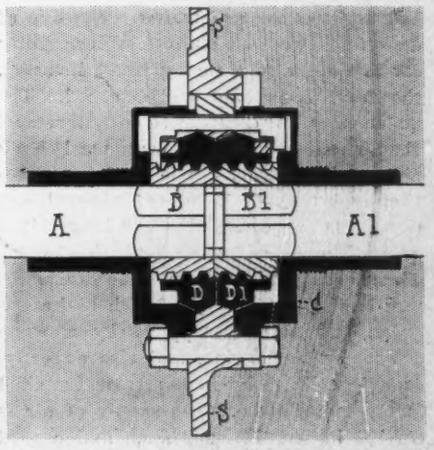


FIG. 13—HEDGELAND'S DIFFERENTIAL SUBSTITUTE

The Realm of the Commercial Car

GRAMM-LOGAN MODEL V SIGHT-SEEING CAR

McKeen Railway Motor Car

THE McKeen railroad motor car is the invention of an Omaha man, W. R. McKeen, and president of the McKeen Motor Car Co., Omaha, Neb. It was while Mr. McKeen was in railroad work that he first conceived the idea of a gasoline-propelled railroad car that would take the place of steam engines on the railroads of the country. In the McKeen motor car there are many things not unlike the ordinary touring car, but everything is on a larger scale. The motor is a 200-horsepower, six-cylinder one, capable of being converted into 250 horsepower, and the many other features resemble in a great measure the working parts of an ordinary motor car. Fifteen railroads have used them to displace steam locomotives on their branch lines, and not a few of them are being used on main lines where traffic is not heavy.

The majority of the cars are made in the 70-foot standard size, weighing 68,000 pounds. Other sizes are 55-foot motor cars for freight use, combination passenger and baggage car and trailer. The line of design followed out on the McKeen motor car is similar to a racing yacht inverted, the front end being wedge-shaped. The underframe is constructed of structural shapes with one-piece cast steel body pieces. The center sill is an I beam section and the sill sides are channel sections. The upper framing is a large 2-inch grooved steel, and 3 and 4-inch channel. The sheeting is Bessemer. The brake system is straight air with 8-inch brake cylinder. The air is supplied by a pump driven by the engine, and also an emergency gasoline-driven compressor, installed in the motor room. The supply of air is carried in two 18 by 96-inch and one 18 by 111-inch seamless steel tanks, secured in the car underframe, with suitable piping to the source of supply. From this air connections are taken off for the whistle, starting the motor and operating the clutch and brake.

The car has a total capacity for 120 gallons of gasoline, carried in an 18 by 111-inch seamless tank, which delivers gasoline to a small auxiliary gasoline tank in the motor room, from which it flows by gravity to the carbureter on the engine. A water circulation is provided for cooling purposes, consisting of a rotary circulating pump, cooling coils, car-heating coils, and expansion tank, all connected with suitable piping. The car is lighted with acetylene from a specially-prepared generator with regulator, gauge, etc., or by commercial storage acetylene, piped to the car by ¼-inch pipe. It is heated by jacket water from the motor, in combination with radiation from exhaust pipe, thereby affording ample heat. Ventilation is by means of intake air ducts, which deliver the air at various points on the floor of the car; the foul air being exhausted at the roof by means of ventilators. Clutches are operated by means of two air chambers, which in turn are operated by an actuating valve on a pedestal, convenient to the motor man, and suitable connection with air piping. Gears, which are arranged to suit grades, are all cast steel.

Castellated nuts, cotter pins and split keys are used wherever necessary to avoid loosening of nuts. The cylinders are cast in sets of three, jacketed with ⅛-inch copper, and the frame is in one solid steel casting. The crankshaft is made of carbon steel, each crank fitted with counterbalances to produce smooth running. The halves of the crankshaft are secured together by a sprocket of forged steel and the drive from the crankshaft is by means of a 5-inch Morse silent chain. All bearings are made of phosphor bronze, and valves are of nickel steel 4 inches in diameter.

The McKeen motor car is capable of attaining a speed of 75 miles an hour, and in a run from Omaha to Denver recently, a distance of 569 miles was covered in 16 hourse 33 minutes. Deducting stops it averaged 44 miles an hour for the entire distance. On another occasion one of the

MOTOR DELIVERY VAN FITTED WITH HALLE MOTOR

cars made the run from Omaha to Los Angeles, a distance of 1,818 miles, in 4 days, including a delay en route of 15 hours, due to traffic congestion. Both the 100 and 200-horsepower cars have successfully maintained regular road service, and at times bucking 3 and 4-foot snow drifts without complications. Out of 6,643 trips of actual service, 99.4 per cent of them have been made on time, or occasionally a few minutes late, and there has been but 6/10 of 1 per cent of failures.

NEWTON ADOPTS SERVICE

The White company has received a communication from Washington, D. C., to the effect that the motor mail delivery plan that has been under trial at Newton, near Boston, for the past 2 months was a success and that it will be continued each year, a contract having just been signed for it. The contract dates back to April 1, when the service was started on trial. According to the contract the White company must put a sufficient number of cars in service so that there will be no delay at any time and these cars must be repaired by the company. A letter carrier will ride in each car to collect and deliver mail. The contract is based upon mileage, the government allowing about 13 cents a mile, the approximate amount for the year being $5,000. The service means much to the citizens of Newton. Prior to July 1, 1908, when it was consolidated with Boston, the city of Newton, embracing 19½ square miles and containing a population of 40,000, had a postoffice at Newton Center and eight postal stations. Seven of these stations as well as Newton Center are on the line of the circuit railroad loop which runs from and to the south station in Boston. The motor car collections provided for under the contract will serve two important purposes. First, the ordinary collections from the street letter boxes, and, second, and in some respects the more consequential, frequent interchanges of mails between the nine stations within the city. Before the experimental motor car service went into operation, a letter deposited in a letter box in West Newton at 9 o'clock one morning sometimes did not get to Newtonville, the adjoining station, in time for delivery the same day, and similar delays in transit between the other stations were not uncommon, owing to the necessity of taking the mail into the Boston office for distribution and back to the stations in Newton to which it belonged. These difficulties will be remedied under the new arrangement by the direct delivery of local mail to the various stations through the medium of motor cars, all such mail collected in the morning reaching the addressees in the afternoon. The service will involve 38,350 miles of travel a year.

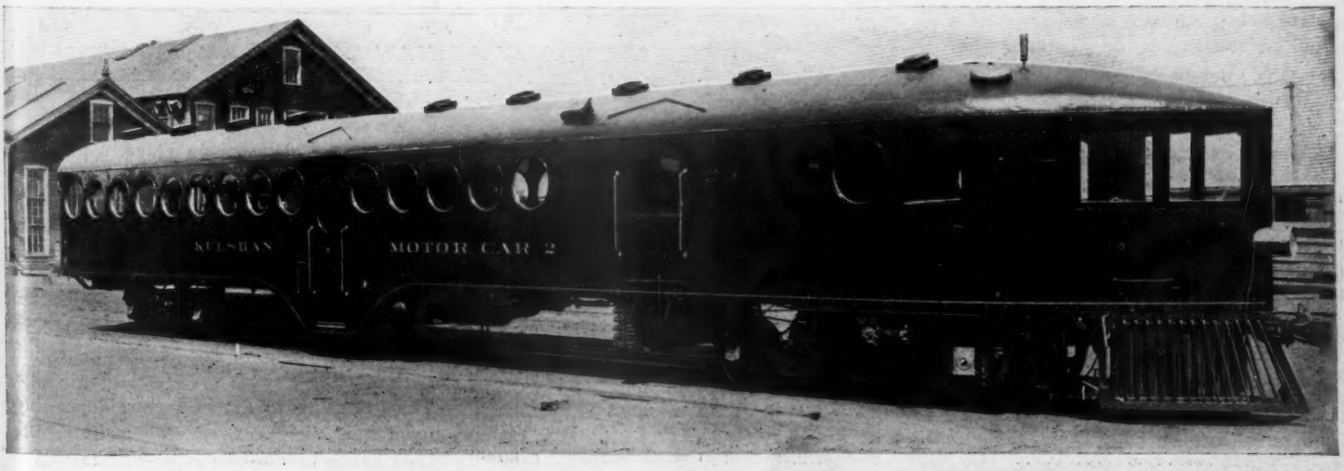
WHITE STEAMER MOTOR PATROL USED AT OMAHA

WOULD CHARGE A FEE

In view of the fact that the Hartford police ambulance has been used many times for cases wholly outside the province of the police department, it has been suggested that the police board make a charge of $1 a ride for those who would thus reach the local hospitals. It is the contention that the hospitals should have their own conveyances and that the police vehicle should be used strictly for emergency calls incident to the department work. It is said that not long ago one supposedly sick man desired to ride on the front seat with the driver rather than recline within on the soft comfortable place provided as a real sick man should.

BROOKLINE BUYS TWO CARS

Brookline, Mass., the richest town in the United States, which is just outside Boston, has authorized the expenditure of $7,500 to equip the fire department with two motor wagons which will go into commission as soon the company which secured the contract for building them turn out the machines. One of the machines will be a 38-horsepower runabout for the use of Chief Johnson. It will have an artillery seat in the rear in which will be carried the chief's equipment. The other vehicle will be a chemical combination hose wagon. This also will be 38-horsepower. It will carry a large chemical tank, a number of feet of hose, life net, axes, etc., and there will be accommodations for six men. Members of the fire department are familiarizing themselves with a wagon of similar design which is in use by the protective department in Boston at a station near the Brookline line.



MCKEEN MOTOR CAR WHICH IS USED IN SERVICE OF UNION PACIFIC RAILWAY

ELECTRICAL DEVICES USED IN MOTOR CARS

By Thomas J. Fay
Part XIII

CHARTING the performance of a storage battery in such a way as to show the effect of time on the capacity of the same, will produce the chart, Fig. 30, giving the capacity in ampere-hours for each rate of discharge. As the curve shows, 100 per cent of the commercial capacity of the battery will be available if the rate of discharge is such that the whole discharge takes place in 10 hours; likewise, in 5 hours, 87.5 per cent of the 10-hour capacity will be available; and in 3 hours, the capacity falls to 75 per cent; whereas, in 1 hour it is barely possible to realize 50 per cent of the 10-hour capacity.

It has been found in practice that, on a 10-minute basis, a good battery will give up about 25 per cent of its 10-hour capacity, and from the point of view of storage batteries in general this is the story; as an ignition proposition, these statements, in relation to capacity as it is effected by rate of discharge, are scarcely worth relating, for, as is well known, ignition batteries do not discharge at such a rate as to empty the battery in 1, 3, 5, 10 or even 100 hours. The ability of a battery, based on its 10-hour capacity then, is a matter of no moment at all, and the question is, what will it do at the slow rate of discharge that obtains in ignition practice?

The natural inference is that this type of battery would discharge on a very economical basis in view of the very long time since the rate of discharge is very low in ignition work. This inference is not always borne out by the facts, and this is the only reason for going over the principles of construction again, particularly in view of the extent to which the matter has been discussed in the past, always involving the class of work that demands the discharge of batteries inside of a few hours at best.

The Rate of Discharge

Before discussing the properties of the battery to show the performance at a low rate of discharge, it will be to the purpose to indicate just what the discharge is in practice. According to Henri G. Chatain the coils then to be had showed qualities as follows:

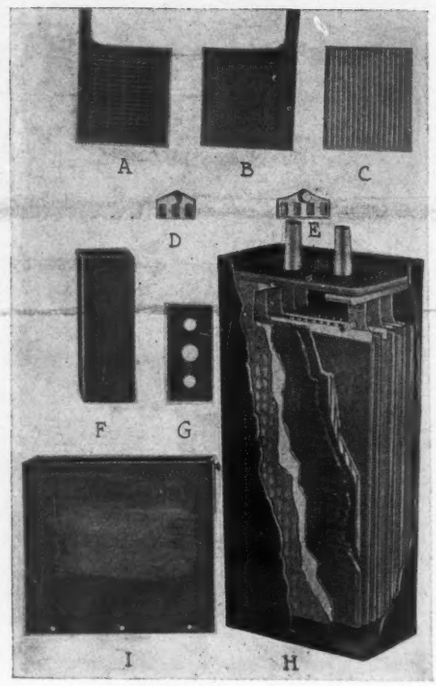


FIG. 31—ELEMENTS OF ASSEMBLED BATTERY

As will be observed, the primary current, which is the current that will have to come from a battery, was below 2 amperes, in every case but one, and it is highly improbable that the actual requirement in average good coils will ever exceed 2 amperes of current for the primary circuit. What the battery has to do then is to deliver at the rate of 2 amperes maximum current, so that any attempt to discuss the details of design and utilization of such batteries, must consider the nature of the service, which is very different from that which is usual, as described in the literature of the subject.

Details of Storage Battery

A storage battery as used in ignition service, is usually of the lead, lead type, in which the electrolyte is sulphuric acid and water of a density about 1.200 specific gravity. The plates are of two classes—positives and negatives—there being one more negative than positive in each nesting in a cell. The elements of a cell of storage battery are given in Fig. 31, and consist of the following: Positive plates A, of which there is one fewer than of negatives; negative plates B, of which there is always one more than positives; separators C, which may be of wood, rubber, or other suitable material, and if of wood must be treated; positive strap D, the function of which is to connect all the positive plates, across the top, into electrical relation; negative strap E, the function of which is to connect all the negative plates, at the top, in electrical relation; battery jar F, made of rubber composition, light, strong and acid proof; cover for the jar G, with holes for the terminals of the elements, and a vent; assembled cell of battery H, showing the elements in place, separated, with cover on; ready for connections; and a battery box I, of oak, usually contrived to hold three cells of battery, sometimes two.

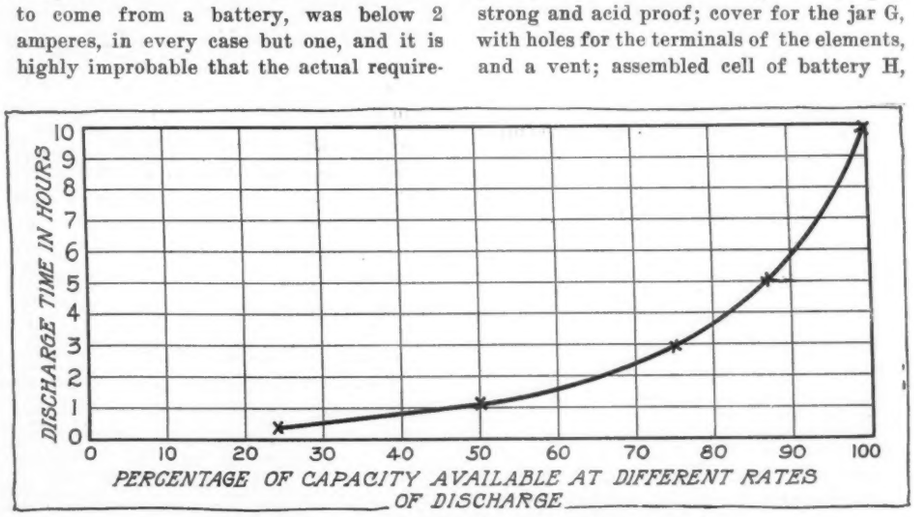


FIG. 30—CURVE OF DISCHARGE OF STORAGE BATTERY

Construction of Plates

The positive and negative plates, called elements, consist essentially of a grid in each case, made of lead-alloy, in which antimony is used to engender stiffness. The grids are in divers forms, depending upon the views of several makers, the idea being to afford space for the active material, and to lock the same in, so that

TEST OF COILS TO ASCERTAIN CURRENT CONSUMPTION

Maker	Fig.	Primary voltage	Primary current in amperes	Trembler vibrations per second	Resistance ohms primary	Resistance ohms second
Apple	18	5.20	2.2	94	.171	3715
Guenet	19	3.7	1.31	111	.39	2337
Guenet	20	5.8	....	123	....	2337
Hardy	21	3.78	1.05	122	.274	2779
Fisher	22	5.8	.82	149	.613	2590
Dow	23	3.84	.57	149	.21	5394
Lacoste	24	3.72	1.46	177	.232	2006
Lacoste	25	5.62	1.94	197	.232	2006
Heinze	26	3.66	1.31	210	.32	1302
Pittsfield	27	....	....	228	....	....
Induction Coil Co.	28	3.62	1.55	360	.312	6180
Milwaukee	29	....	....	390	.312	6180

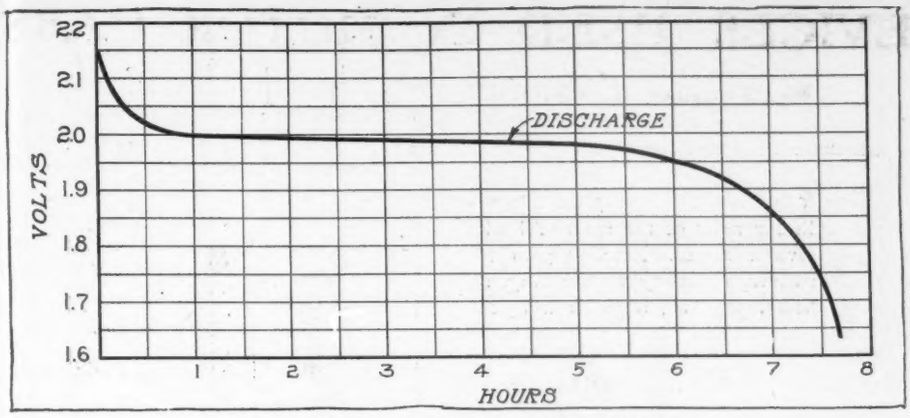


FIG. 32—CURVE OF DISCHARGE OF CELL OF LEAD

it will not drift out, as it is prone to do, under the action of the charging, and discharging current. Surface is the great requisite, and it is the aim to afford the maximum area of the finished plates, per pound of active material used; limiting the weight of the supporting grid, in so far as it is possible to do so.

Porosity of Greatest Importance

The active material is a combination of the salts of lead as PbO, PbO_2 and $PbSO_4$ made into a paste or cement in such a way as to combine great tenacity with equal porosity, primarily to assure that it will not drop out of the grid, once it is applied, and again, in order to enable the electrolyte to penetrate and act upon the active material. Obviously the ability of a battery in general service will be efficient in proportion as the active material is porous, particularly if the rate of discharge is that which will dispose of the full charge in a short time, as in 3 hours for illustration, which is the probability in vehicle service.

Since ignition batteries are only required to discharge at a very slow rate this question of porosity, although it is entitled to consideration, is secondary to local action and automatic sulphation. With a view to casting more light on the difference between batteries in the two different classes of service, reference will be had to curves to express the point to be made; Fig. 32 shows the performance of a cell of battery when the same is discharged at a moderate rate after it is freshly charged considering a prime condition. As will be observed, the voltage falls from 2.2 when the circuit is closed, and reaches a 2-volt level within the first hour. The tapering down of the voltage during the next 5 hours, is almost a negligible quantity, and from then on, the voltage declines at a rapid rate, showing that the sulphion is being restricted in its ability to mingle with the remaining active material. If, instead of a freshly-charged cell of battery, a partially-discharged cell is used, especially if it has been allowed to stand for some time, the discharge from that point on will be somewhat as shown in the curve Fig. 33; the whole output will be considerably less than that of a freshly-charged battery that has been allowed to discharge at a normal rate, and the voltage on discharge will be lower than in the case of the freshly-charged cell.

Why this should be so, has been variously explained, the most potent of which is that when a battery is charged, if it is then allowed to stand, the active material will sulphate; that is to say, the PbO_2 will reduce to $PbSO_4$, at a rate depending upon the manner in which the cell is contrived and the extent to which sulphate is present at the end of the charge. If some sulphate is present when the charging process is discontinued, which is not unusual, or, if the cell is partially discharged before it is allowed to rest, it will automatically discharge, and sulphate will continue to form; so that it is a normal expectation that the whole output of the cell will be less than in the case in which the cell is discharged forthwith upon charging.

Disadvantage In Ignition Work

From what has been said batteries of the lead-lead genera are unfairly placed in ignition work, for the very reason that they will sulphate on open circuit, for the very reason they are in a condition of partial discharge all the time excepting for a short period after they are put to work; and it is impossible to prevent them from continuing to discharge even on open circuits. Unfortunately the sulphate so formed is very persistent, which is another way of saving that in the subsequent charge the sulphate so formed will remain as sulphate in the presence of a vast amount of continuous charging, which is a waste of electrical energy, and the least of the evils in view of the rapid depreciation of the cell of battery that is oversulphated.

Specialists in this line, recognizing laws that govern the situation, have made provision for the shortcomings that are inherent in batteries, and by a careful study of the situation have been enabled to correct the evils in a manner as follows: Local action, which is bound to be present if the grid is exposed to the electrolyte is obviated to a vast extent by coating the grid all over its surface with a considerable depth of active material. It is one of the points that experience has made, that the active material will not sulphate beyond a certain depth and while sulphate must form, if the cell of battery delivers electrical energy, the fact remains that the process will stop of its own volition when a good coat of sulphate is grown over the surface of the active material. Glancing at Fig. 34 note a section of a cell, showing one positive and two negative plates with separators between them. The grids are shown as solid sections of pure metallic lead, and the active material is peroxide of lead on the positive plate, and spongey lead on the negative plates. This is the formation when a battery is fully charged, and in this case, the illustration shows the active material all over the grids, in such a way as to act as an armor with the idea of limiting sulphation to the surfaces of the active material, on the theory that the action will not extend to the full depth, and the grids will not participate electrically so that local action will not be present due to the difference in potential between metallic lead and the active material composed as it is of salts of lead.

Types of Batteries

Fig. 35 illustrates a similar section of a cell of battery, in the fully-discharged state, with sulphate of lead formed on both the positive and negative plates to a considerable depth of the whole amount of active material, but there is an armor of unsulphated active material all over the surfaces of the grid to protect the

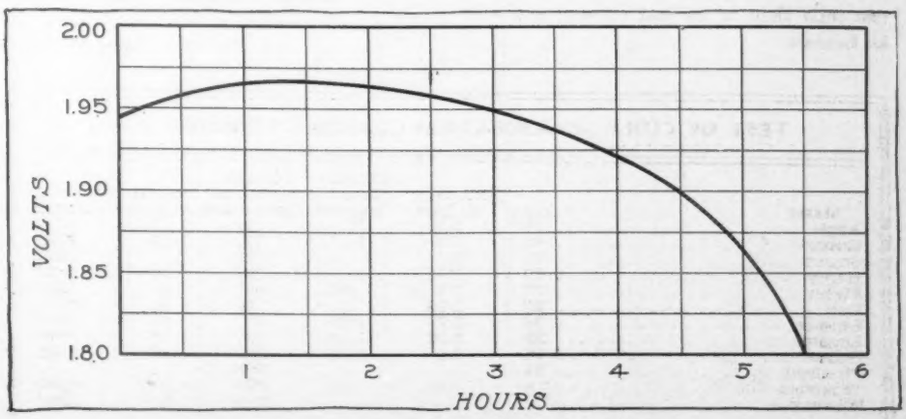


FIG. 33—DISCHARGE OF SULPHATED CELL OF BATTERY

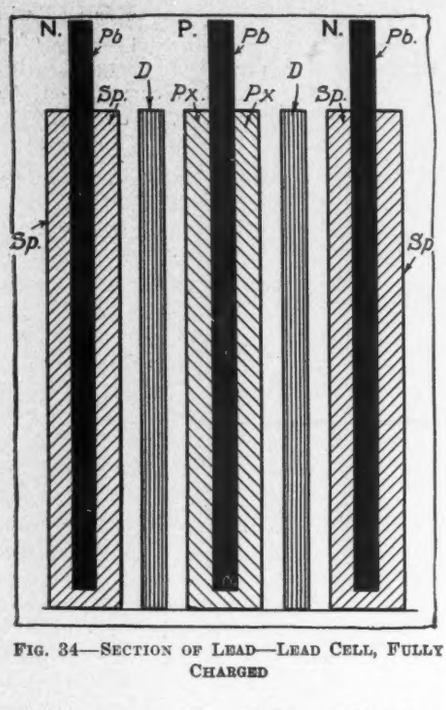


FIG. 34—SECTION OF LEAD—LEAD CELL, FULLY CHARGED

grid; to serve as a binder; and defeat local action, in so far as it can be present, due to exposing the metallic lead to the action of the electrolyte. In each case the plates are submerged in electrolyte, in cells, which is a condition that cannot be disposed of, since electrolyte is essential to the success of the enterprise for various reasons. The conditions during charge and discharge are as follows:

Conditions During Charge and Discharge

Charge

(a) $Pb\,O_2 + H_2\,SO_4 =$
$Pb\,So_4 + H_2O + O$

(b) $Pb + H_2\,SO_4 = Pb\,SO_4 + H_2$

(c) = (a) + (b) or
$Pb\,O_2 + Pb + 2H_2\,SO_4 =$
$2Pb\,SO_4 + 2H_2\,O$

Discharge

As the formula shows the sulphion in the electrolyte enters into combination with the active material of the elements, so that it is as essential to have sulphion as it is to employ the active material or the grid to serve as a retainer and conduct the electrical current. The formula is a mere approximation, as is well understood by experts in this field on the ground that the active material is not all converted and much of the same holds to a state of conglomeration, involving all the salts of lead, prominent among which will be found, Pb O, $Pb\,O_2$, and $Pb\,S\,O_4$, in which it is generally considered that the sulphate of lead represents a surface condition. Oxide of lead is intermingled with sulphate and peroxide of lead, as an intermediate state, and peroxide of lead will obtain as the under layer. The remaining intermediate conditions are so transitory in their habits that it is not easy to depict them in a way to afford benefits worth while.

Disintegration Bane of Battery

The sectional illustrations, as given in Figs. 34 and 35, indicate a thick layer of active material all over the surfaces of the grids of pure metallic lead; this condition in practice would lead to rapid deterioration due to the changes that take place in the structure of the active material during charge and discharge, which is easily explained if account is taken of the bulk for mass of the salts of lead in their several states. According to Lindon, in Storage Battery Engineering, second edition, page 32, a given weight of metallic lead will form 1.155 times its weight of lead peroxide, and it will increase in bulk 15.5 times; this in itself is enough to show that it is necessary to so lock the active material into the grid so that it will not grow; in other words, so that it will not protrude out, and short-circuit across the intervening space, or drop into the bottom of the cell, there to remain inactive besides causing a short-circuit between positive and negative plates, which is the condition that obtains when a cell is said to be mudded.

The relative proportions between metallic lead and the salts that are present in storage batteries has been stated by the same authority as follows:

$PbO_2 \times 0.866 = Pb$
$Pb \times 1.155 = Pb\,O_2$
$Pb_3\,O_4 \times 0.906 = Pb$
$Pb \times 1.104 = Pb_3\,O_4$
$Pb\ 1.075 = Pb\,O$
$Pb\,O\ 0.93 = Pb$
$Pb\,O_2 \times 0.937 = Pb\,O$
$Pb \times O\ 1.067 = Pb\,O_2$
$Pb\,O_2 \times 1.275 = Pb\,S\,O_4$
$Pb\,S\,O_4 \times 0.785 = Pb\,O_2$

The formula as given among other data shows that in the reduction of peroxide of lead to lead sulphate, the bulk changes in the ratio of .875 so that it is quite to be expected that a large mass of active material plastered upon a lead plate will fail to hold its palstered shape or to the grid. In any cell if the active material detaches, it not only becomes inactive, but it destroys the action of the cell, if it is in sufficient presence to bridge across the spaces that are reserved to induce electrolytic action in the manner as previously explained.

(To be continued.)

Head-Light Test in England

London, June 19—For some time it has been felt by the majority of people in the motoring world that, if only to allay the constant outcry against the dazzling power of head lamps, it would be desirable to carry out a series of trials, in order, among other objects, to see if any of the devices which are claimed by their manufacturers to obviate dazzling, are really efficacious, and to compare the comparative lighting powers of acetylene, oil and electricity, the last named having rapidly come into favor during the past few months, especially when produced by a self-contained generator. There is no doubt that dazzling head lamps have contributed not a little to the unpopularity of cars which still persist in many parts of Great Britain, and although numerous makes of lamps are fitted with shutters that can cut out the most powerful portion of the light rays, it is very rarely that such devices are actually used in practice.

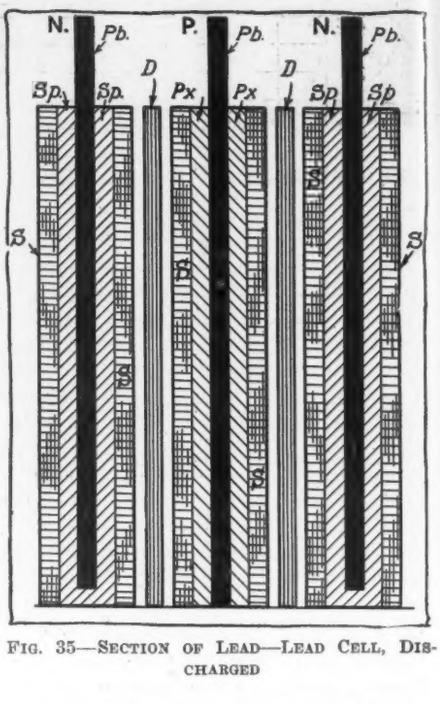


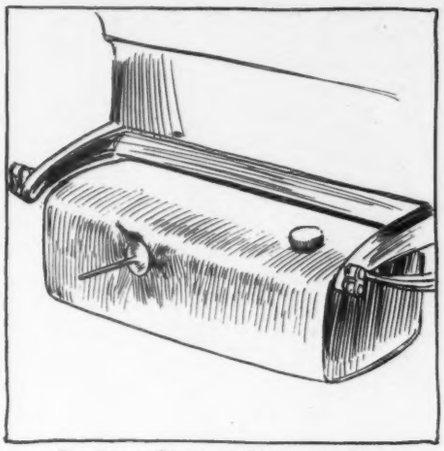
FIG. 35—SECTION OF LEAD—LEAD CELL, DISCHARGED

Among other things which have been suggested as a possible cure for this very real evil, is the gilding of bus-mirrors and reflectors instead of silvering. This is claimed to obviate much of the dazzling effect without impairing the amount of effective illumination. The tests which the R. A. C. is organizing and which, by the way, have been accorded a very mixed reception by the trade, will take place at the Crystal Palace, London, on July 19, when the following points of merit will be taken into consideration: Absence of dazzling effect, range of lamp, horizontal dispersion of beam, absence of back reflection, simplicity of design and general construction. The scale according to which the various qualities will be considered is: 30 marks in relation to dazzling effect, 20 marks for range of lamp, 15 marks for horizontal dispersion of beam, 10 marks for absence of back reflection, 10 marks for simplicity and general construction. Each lamp will be tested separately under exactly similar conditions and the test will be as far as possible of a mechanical nature. In order to assist in the design and construction of a successful lamp, the R. A. C. has decided to conduct the tests without any entry fee whatever.

The Motor Car Repair Shop

Removing Dents

THERE appeared in a foreign paper some time ago and later in a domestic contemporary, a suggestion for removing dents from lamps and horns, which can also be applied to dents in gasoline tanks, oil tanks and radiators; and which might be appreciated by readers of Motor Age. The method suggested consists of soldering a piece of wire to the bottom of the dent, then pulling the depressed portion out to its proper position. When the dent happens to be in an oil or gasoline tank, or a radiator, an old valve can be most effectively used in place of the wire, as shown in Fig. 1. The top surface of the valve is filed smooth and bright, then cleaned with soldering acid and tinned with solder. A flat surface of the same area, and as near the bottom of the dent as possible, is treated in the same manner, and the valve sweated on. This sweating on is done by placing the prepared portion of the valve against the tinned surface of the dent and then applying heat with a torch till a fusion of the solder takes place. The heat should then be removed and the solder allowed to set. When cool, it will be found that with the valve stem as a handle and lever, and probably a few light taps with a hammer around the edge of the dent, the deformed part can be most easily straightened out.



REMOVING DENT IN GASOLINE TANK

Annoying Squeaks

A repair man is sometimes called upon to locate and eliminate a squeak which is caused by the edge of the doors rubbing against their pillars. This rubbing, generally occurring at A, Fig. 2, is brought about by a sagging of the body in the center, and may be remedied by placing a leather washer of the required thickness around the body bolt, between the body and the frame at B. This sagging may be due to a sagging of the frame, in which case the motor and change-gear case may also require a little lining up. Body squeaks of the same nature occasionally occur at C, or at D when the body is jointed to the dash at D, and for the same reasons as above stated. Another cause is due to negligence on the part of repair men to replace one or two of the washers originally provided, after a body has been removed for repairs; the washers being more apt to stick to the body when it is removed and drop off unnoticed before same is replaced.

Look Before You Strike

"Say, boss," said the junior repair man, approaching the foreman of the shop, "the right rear wheel of that car there is harder to get on than it was to get off. Can I get a hardwood block somewhere to use in driving it on, so I won't spoil the thread on the hub? Those soft wood blocks go to pieces so easily."

"Well, I guess you can," answered the foreman. "But what is the reason the wheel goes on so hard?"

"I don't know, she ought to go on easier."

"Well, let's have a look at her."

Going over to the obdurate wheel the foreman took up the hammer and a piece of the broken blocks that still contained a solid section, and holding it against the end of the hub he struck it a steady blow. The wheel refused to budge.

"Hand me the wheel puller," he said quietly. And, removing the wheel, he took a light and carefully examined the keys, which were of the Woodruff type and three in number.

"Did you have any of these keys out?"

"Yes, sir, the middle one dropped out."

Handing the light to the apprentice, he asked: "Do you see anything wrong with that middle key?"

Carefully examining the keys, he found them as illustrated in Fig. 3.

"Ah, yes, I see now, the key is turned around," and removing it he was about to replace it correctly when the foreman said: "Here! Don't you see something else wrong with that key?"

Again scrutinizing the key he replied: "No, sir, it was just turned around so that this little cut away part—meaning C on key K—was on the wrong side, that's all."

"Get me a smooth file, then," said the foreman. And taking the file and the key, he filed the burr B off the key K, which was made in the first attempt to drive the wheel onto the shaft. The key was then properly replaced, and the wheel slipped almost all the way on, without striking a blow, and a few light taps with a hammer drove it snugly into place.

Errors, such as depicted in the above colloquium, are not uncommon in repair shops and are usually due to a lack in the repairmen of a disposition to look before they leap. The prevailing idea seems to be that the work of a mechanic must needs be laborious, while on the contrary the object of mechanics is to render hard work easy, which it does when properly applied by men who are observing.

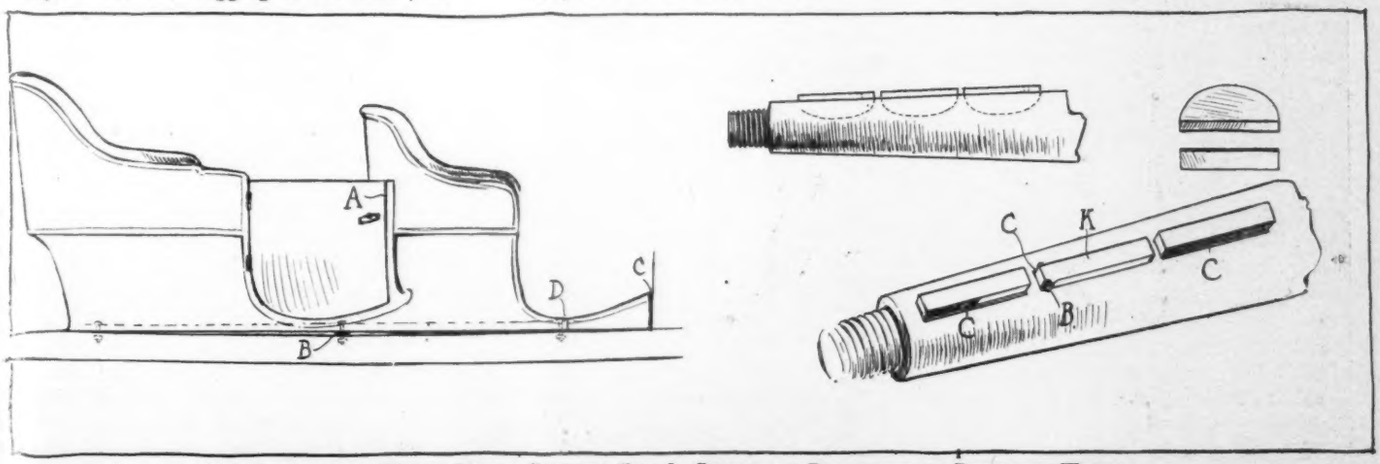


FIG. 2—SHOWING WHERE BODIES SQUEAK; FIG. 3, CAUSE OF DIFFICULTY IN REPLACING WHEEL

From the Four Winds

N S E W

New England Show—The Worcester, Mass., Agricultural Society is to hold a motor car show in conjunction with the agricultural fair this year. Invitations to enter the show will be sent to all dealers in New England.

Good Roads Delegates Named—Governor Harmon, of Ohio, has appointed Edwin S. Wertz, of Wooster; Lyman Spitzer, of Toledo; James Marker, of Greenville, and J. Gordon Neff, of Cincinnati, as delegates from Ohio to the national good roads convention, to be held in Seattle on July 4. Wertz is a member of the state legislature and is the author of the Ohio good roads law.

Maxwells in Glidden—Formal announcement has been made that the Maxwell-Briscoe Motor Co. will enter two cars in the Glidden tour. The Maxwell entries consist of a four-cylinder 30-horsepower touring car, which will be a contestant for the Glidden trophy, and a 30-horsepower touring car, which will be a contestant for the Hower trophy. The drivers of the two cars will be Charles Goldwaite and Arthur See.

Fuel Test for Buffalo—The board of directors of the Automobile Club of Buffalo will conduct a 1-gallon gasoline mileage test for pleasure motor cars. Laurens Enos is chairman of the committee in charge of the event. The contest will be sanctioned by the contest board of the American Automobile Association. The contest will be held on Wednesday, July 7. There will be five classes, made up as follows: Class A, for cars selling at $1,000 and under; class B, for cars selling from $1,001 to $2,000; class C, for cars selling from $2,001 to $3,000; class D, for cars selling from $3,001 to $4,000; class E, for cars selling over $4,000.

Wants Streets Repaired—The Racine Motor Club, of Racine, Wis., is after the city officials to place the streets in passable condition. On Main street last week, the car of Aaron Younkers, of Des Moines, Ia., who was touring from Chicago, sank to the frame and twenty men worked an hour to release it.

More Street Sprinkling Wanted—A new Wisconsin law permits the city of Milwaukee, Wis., to assess adjoining property owners for the cost of sprinkling streets. The board of public works estimated that the cost to property-holders will be from 2 to 2½ cents per foot for a year. It thus seems certain that there will be a more general sprinkling of the streets this season than last, when the city stood the entire expense, which was something like $75,000.

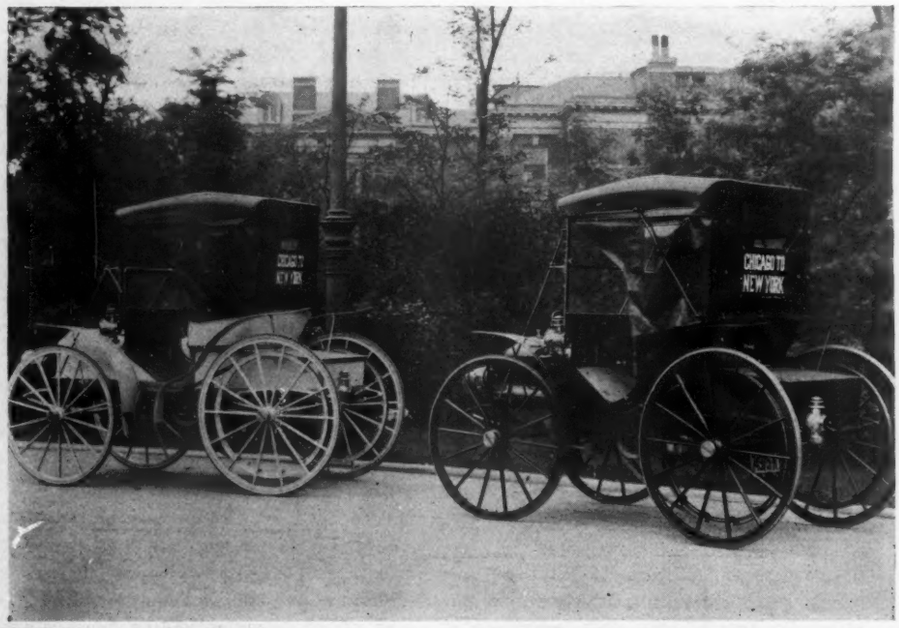
Start Building Good Roads—The first actual construction work on the good roads system to be built in Maryland under the $5,000,000 loan has been started at Oakwood, Cecil county. One mile of road will be constructed as an experiment. The work will be done by a contractor to ascertain if durable highways can be had at less cost than the building of roads under the Shoemaker act and by the direction of the state geographical survey. The cost of Shoemaker roads varied from $7,000 to $9,000 a mile. Work will also begin immediately on 3.1 miles of road from Chestertown toward Kennedyville, in Kent county; 1 mile of road from Westminster toward Manchester, in Carroll county; at Hurlock, Dorchester county, 5½ miles of road; 1 mile of road from Federalsburg, Caroline county, to the Dorchester county line.

Kisselkar Sixty Wins—A six-cylinder 60-horsepower Kisselkar, with a score of 267 miles, took first honors in the Ascot Park 6-hour derby held at Los Angeles, Cal. Lee Gehricke drove the Kisselkar, holding a speed of 1:10 for mile after mile.

Locomobile Wins Foreign Climb—At the Call d'Aspin mountain climb in the Pyrenees, France, on June 3, a distance of nearly 60 miles, Z. K. Graham, of Los Angeles, Cal., who is touring Europe in his Locomobile 40, won a signal victory, beating his nearest competitor by more than 20 minutes. Among the contenders were a Mercedes, two Panhards, a Wooiesly, Hotchkiss, Renault and Gladiator. Mr. Graham's car was the only contender of American make.

Portland Troubles Over — President Wemme, of the Portland Automobile Club, of Portland, Ore., has called a meeting of the committees in charge of the road races during the rose carnival to determine the financial results. The protests and complaints which were made by some of the drivers as the result of certain maneuvers executed by others during the 100-mile Wemme cup race have been withdrawn and the squabbles into which some of the dealers indulged in after the winners of the race were announced have come to an end. Plans are already taking shape for races to be held at the same time next year.

Amateur Run Planned—Colonel F. M. Joyce, as president of the Minnesota State Automobile Association, is now perfecting plans for a "little Glidden tour" to be held by the Minnesota association for 3 days, August 26, 27 and 28. This event will be strictly an amateur run, open only to owners of cars, and will be carried out under the rules of the big Glidden tour. Three routes are under consideration, one from Minneapolis to Fargo and return; another through the southern part of Minnesota, including some fifteen towns and cities in which there are thriving clubs, and the third to Duluth and return. Care will be taken to not to exceed the speed laws of the states visited and the miles per hour schedule will graduate from 12 to 16, according to the classes. A $500 silver trophy has been hung up by the St. Paul Despatch, the conditions making this run an annual event, the winner each year to have possession of the cup for one year. Two other silver trophies, valued



DUER MOTOR BUGGIES THAT MADE LONG CROSS-COUNTRY TRIP

at $100 each, have been offered by Colonel Joyce and H. S. Johnson, chairman of the tours and contests committee of the association. These are for the runabout and toy tonneau classes and become the property of the winners.

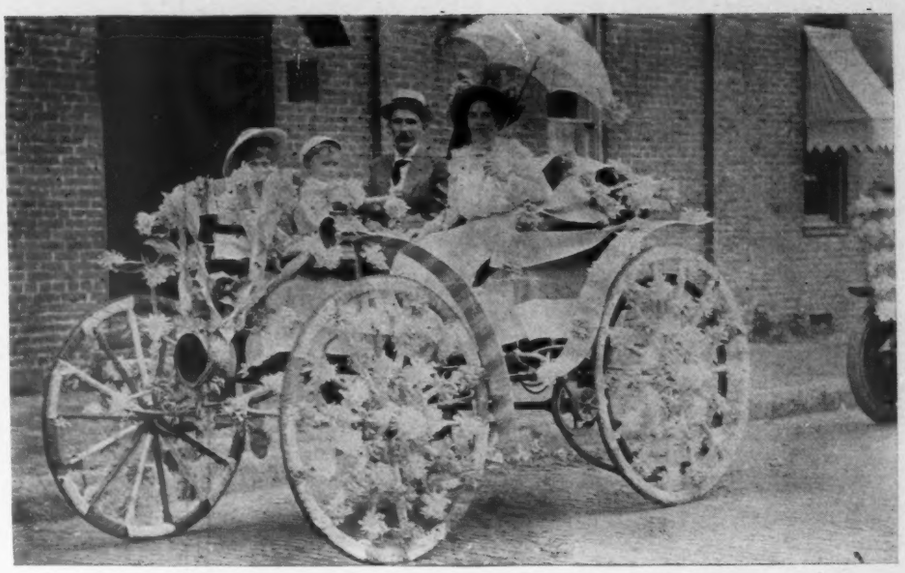
Wisconsin Growing — Wisconsin has passed the 8,000 mark in registration of motor cars and vehicles, and the secretary of state is issuing licenses at the rate of 150 a week. The registration since January 1 is already more than 25 per cent of the total registration since the license law was first created.

Long Regal Trip Planned—George Wilcox and Attorney Richard P. Byrne, of the Mora Sales Co. of Syracuse, will leave New York on Sunday morning, July 4, on a tour across the continent in a Regal 30, with San Francisco as their objective point. The object of this run will be to thoroughly test out the new 1910 model of the Regal before placing it on the market. Mr. Wilcox has also been commissioned to visit all Regal agents en route.

Sign of the Times—Andrew Ansmacher, one of the veteran cab drivers of Milwaukee, Wis., has quit the box for the chauffeur's seat, despite his 60-odd years. He has sold his horses and has given his order for a taxicab. He says: "I might as well come to it now as later. I haven't been making my salt for the last year. There isn't such a lot of money in taxicabs, but they ought to pay better than hacks. The handwriting on the wall reads 'Gasoline.' So me for gasoline."

Kemp on Commission—Governor Draper, of Massachusetts, has appointed Representative Frank D. Kemp, of Springfield, as a member of the state highway commission to take the place vacated by the death of John H. Manning. Mr. Kemp joined the commission last week when the legislature adjourned. He was chairman of the ways and means committee of the lower branch of the legislature, and was being groomed as a candidate for mayor of Springfield until he was given the new appointment.

Everybody Helping—In an energetic campaign now being conducted throughout the south in behalf of good roads, newspapers, motor car manufacturers and owners are enthusiastically co-operating. The campaign has now reached a point where the desire for good roads has become almost a mania and motorists in all parts of the south are making tours to educate the users of the road to the importance of better public highways. Joseph Klouse, Charlotte, N. C., has just made a trip of 3,000 miles in a Rambler in which he visited many of the important cities in the south, distributed literature along the way in behalf of good roads and aroused much interest in the movement. The Rambler driven by Mr. Klouse has traveled over 18,000 miles and it finished one run of 250 miles from Charlotte, N. C., to Atlanta in 21 hours and 30 minutes. Mr. Klouse represents the Charlotte Daily Observer, of Charlotte, N. C., in the New York Herald-Atlanta Journal good roads promotion.



C. K. Caruthers, Pine Bluff, Ark., in Floral Parade Prize-Winning Holsman

High-Wheelers on a Tour—Recently two high-wheeled Duer motor buggies made a trip overland from Chicago to Oneonta, N. Y., traveling a distance of 871 miles, the running time being 64 hours. The cars were painted at the plant of the Chicago Coach and Carriage Co. in Chicago and the two purchasers went after them and drove them home.

Interested in Dust—The Milwaukee board of Park commissioners recently went to Chicago on a junketing trip to investigate dust-laying preparations on park driveways and boulevards, and as a result, exhaustive tests will be made in Milwaukee parks, driveways and boulevards of tarvia, asphaltoilene and similar preparations.

Ohio's Motor Strength—According to the records at Columbus, O., there are more than 18,000 motor cars operating in the state of Ohio. License number 18,000 was issued last week by the state registrar. At the same time the $100,000 mark was passed in point of receipts from this source, while the cost of operating the department, including all items of expense, has been less than 25 per cent of the income.

Prepare for the Glidden—Frank P. Hixon, president of the LaCrosse Automobile Club, has mailed a circular letter to the editors of all papers in that section of Wisconsin, asking them to warn farmers and drivers of horses of the fact that on the morning of July 15, 100 or more cars participating in the annual A. A. A. tour for the Glidden trophy will run over the roads from Madison to LaCrosse, and asking that horses unaccustomed to machines be kept off the road, especially at hills and crooked points in the roads. The Milwaukee and Madison clubs are making preparations in a like manner. Madison, the state capital, will arrange a brilliant welcome for the tourists, who will be in the capital on the night of July 14 to 15.

Quite a Difference—The celebration of the golden wedding anniversary of Mr. and Mrs. Frederick Kimmel, of Fond du Lac county, Wis., last week, made occasion for an historic pageant on a small scale. The couple were driven to the church where they were married 50 years ago by ox-team, in the manner of locomotion at that time, but they returned in a large touring car owned by a son. The incident showed amply the evolution of conveyances during a half century.

Show for State Fair—Walter Wilmot, Hotel Nicollet, Minneapolis, is in charge of the motor car show that is to be run in connection with the state fair, situated at Hamline, half way between St. Paul and Minneapolis, which is to be held the week of September 6-11. The show room will be on the ground floor of the new $200,000 concrete grand stand. The fair board has agreed to feature the show in its advance advertising and in addition will give the motor car exhibitors free of charge all the space they want in the fair grounds weekly which will be issued.

Floral Parade Booked—A floral parade for motor cars and motor cycles is the latest project in Washington. The affair is being promoted by the Washington Post, which has offered prizes aggregating $1,200 for the best-decorated cars in the several classes. July 5 is the date selected and the parade will start at 4:30 o'clock in the afternoon. The route will be down Pennsylvania avenue to the Peace monument and return and thence to the speedway along the Potomac river, where the judging will take place. Considerable interest is being manifested in the affair, notwithstanding the unseasonable date selected.

News from the Motor Clubs

Ride for Delegates—The Wisconsin Valley Automobile Club, of Wausau, Wis., tendered the 300-odd delegates to the Wisconsin state Sunday school convention a tour of Wausau and the surrounding country last week.

Start New Club—The Punxsutawney Automobile Club, of Punxsutawney, Pa., has been organized with the following officers: B. M. Clark, president; A. W. Calloway, vice-president; J. H. Kennedy, treasurer; W. R. Cole, secretary. The club also has a strong organization in its various committees, being composed of the business men in the city.

Elmira Club as Host—The Elmira Automobile Club, of Elmira, N. Y., recently had as its guests in a motor car party, the members of the Home for the Aged, the children of the Orphans' home and the children of the Industrial school in that city. After a long ride, the procession went to Eldridge park, where the lake was circled and then the fun began in earnest among the varied attractions.

Club Is Growing—The Worcester Automobile Club, of Worcester, Mass., has signed a lease with the owners of the Chase building to double the floor space of its present quarters. Work has already commenced in fitting up the new space. While the club now occupies the entire top floor of the building, the quarters have grown too small with the increasing membership of the organization. Five hundred members are now enrolled. The billiard and card rooms of the club will be moved to the floor below, which has been leased, and the parlors will be doubled in size. The dining rooms will be greatly enlarged, the present main dining room being made into one of the numerous smaller dining rooms, while a new main dining room will be fitted out with mission furniture. This will occupy part of the new space.

Another New Club—The Bellefonte Motor Club, of Bellefonte, Pa., was organized last week with the following list of officers: President, Robert F. Hunter; vice-president, John S. Walker; secretary, Mitchell I. Gardner; treasurer, Frank E. Naginey; executive committee, Col. W. Fred Reynolds, chairman; Colonel H. S. Taylor, James H. Potter, W. A. Moore and N. B. Spangler. The last-named was appointed chairman of the law and ordinance committee, with Dr. John Sebring and T. S. Strawn as the other members. There were twenty-seven charter members, and the next meeting as many more will be admitted to membership. The interest aroused by the laying out of the route of the Quaker City Motor Club's Pittsburg run through Bellefonte was partly responsible for the organization of the new club and the members are preparing to give the contestants a cordial reception when they pass through on June 15.

Draws Up Road Rules—The Berlin Automobile Club, of Berlin, Wis., is preparing to publish a schedule of rules of the road and hints for driving. The keynote will be, "In meeting, keep to the right; in overtaking, keep to the left."

South Bend Election—The South Bend Automobile Co., of South Bend, Ind., has elected the following officers: L. P. Hardy, president; Walter A. Hager, vice-president; Samuel B. Robinson, secretary; Jacob Woolverton, treasurer. E. C. Witwer, H. M. Kaufman and Dr. G. V. Nienstedt were elected to the board of governors. The club has inaugurated a campaign for new members and expects in the fall to hold some events that are believed will attract many visitors to the city.

Michigan State Election—A meeting of the Michigan State Automobile Association was held in Detroit at which the following officers were elected: President, E. A. Skae, Detroit; vice presidents, J. R. Jackson, Grand Rapids; D. Emmett Welch, Grand Rapids; J. C. Hatfield, Kalamazoo; secretary, T. C. Warnhuis, Kalamazoo; treasurer, J. J. Ramsay, Detroit; board of directors, E. S. George, J. J. Ramsay and E. A. Skae, Detroit; T. C. Warnhuis, J. C. Hatfield, Kalamazoo; Dr. L. R. Munger, Hart; W. C. Orrell, Flint; J. R. Jackson, Grand Rapids; N. E. Hubbard, Battle Creek; W. C. Westover, Cadillas. The following committee chairmen were appointed: Executive, E. A. Skae; good roads, E. S. George; membership, J. R. Jackson; legislative, A. F. Peck, Detroit; tour and contest, R. D. Chapin, Detroit.

Progressive Club—The Middleboro A. C., of Middleboro, Mass., held its first summer meeting last week, followed by a spread which was very well attended, and several matters of interest were discussed. It was voted to purchase signs marking the roads in its vicinity so that there will be no confusion when visiting motorists are going to and from the cape. It was also decided that it would be a good plan to erect signs near schoolhouses so motorists approaching such places about the time sessions are to begin or end may be careful and avoid accidents. The club appointed a committee comprising Carlton W. Maxim, Representative George H. Doane and Harlas L. Cushman to attend to the work of eliminating bad corners by purchasing property and cutting down the trees. Much has been done along this line already, and the club proposes to continue it until every spot where it is impossible for drivers of cars approaching to see each other has been removed. The work of erecting banners promising a fair deal and asking for one in return was pronounced a big success both at Middleboro and Wareham.

Clubs May Merge—There is a possibility that within the near future the Kansas City Automoble Club and the Elm Ridge Club, or at least the members of both organizations will consolidate. The Elm Ridge club is the owner of the race track and club grounds at Kansas City, Mo., and it is believed by the promoters of the proposition that a consolidation would be beneficial to both clubs.

Starts a New Club—The impetus given motoring interests in Pottsville by the recent passage of the Quaker City Motor Club's Pittsburg run through that place resulted in the formation last Friday night of the Pottsville Automobile Club. Judge H. O. Bechtel was elected president; W. A. Cather, vice-president; J. H. Filbert, secretary; Capt. Baird Halberstadt, financial secretary, and W. L. Kramer, treasurer. The foregoing, with R. J. Nulls and R. H. Bergeman, will constitute the board of governors.

Club at Boulder—The Boulder Motor Club, of Boulder, Colo., has been organized with a charter membership of fifty. Secretary Frank England and Dr. Edward F. Dean, of the Denver Motor Club, were present at the meeting and were active in the organization work. The club will at once apply for membership in the Colorado State Automobile Association and the American Automobile Association. The officers chosen for the first year are: President, Harry Gamble; vice-president, R. P. Penney; secretary, O. J. Watrous; treasurer, J. P. Herman.

Cleveland's Annual Tour—Members of the Cleveland Automobile Club who join the annual 3-day run, not for several years has as promising a trip been outlined. The 3-day trip will embrace the towns of Conneaut, O,; Mayfield, Jamestown and Chautauqua, N. Y., and either Cambridge Springs or Saegertown, Pa. It is expected that at least thirty cars and probably more will make the trip. The party will leave Cleveland Saturday morning, July 3. Lunch will be served at the Hotel Cleveland in Conneaut, and the cars will reach Peacock Inn, Mayfield, N. Y., for a stop over night. On Sunday, July 4, the party will proceed around Lake Chautauqua to Jamestown, and it is probable that the night will be spent either in Cambridge Springs or Saegertown. On Monday, July 5, the stop will be made at Conneaut lake, and from there the cars will proceed back to Cleveland during the afternoon.

Manufacturers' Communications

CARE OF THE MOTOR CAR

CLEVELAND, O.—Editor Motor Age—Much as motorists enjoy their cars, there are many who would derive far greater pleasure and secure better service and longer wear by the adoption of a few rules for the care of their cars, with a view to preserving their appearance as well as adding to their efficiency. It may surprise some to know that, if properly cared for, there is no reason, barring accidents, why a thoroughly-finished car should not look as well at the end of 6 months' service as it did when first delivered from the factory. When a motor car has lost the first gloss of its outer covering it has not only suffered in appearance but has depreciated somewhat in value as well. Of course, in time, any car will need new painting, but this should be a matter of years instead of months, as is too often the case. The use of needlessly strong alkali soap in cleaning cars, neglect to wash off the soap and failure to dry the varnished surface perfectly are probably responsible for more damage to paint than all other causes combined.

As a matter of fact, neither soap nor water should ever be used on a motor car above the under sides of the fender, except in cases where the mud is caked on the body in large quantities, but with such cars as the Royal Tourist model M and other high grade machines this is virtually impossible. In most cars the first signs of wear invariably show on the varnished surface of the hood. This is due to the fact that the hood is frequently covered with mud on the return from a run and is then washed with soapy water while the metal is still hot. Soap should not be used on the hood until it has cooled and even then should be carefully washed off. After a number of washings while the hood is still hot the injurious effect is quite noticeable and within a short time the car is sent to the shop to be repainted long before its legitimate time.

A good mixture for the preservation of the appearance of the car is a gallon of boiled oil, a ½ pint of gasoline and ½ ounce of Japan dryer, the whole well-mixed. This should be applied with a soft rag or cheesecloth and should be used sparingly, the varnished surface being washed perfectly dry. So much for the body.

The principles applying to the proper care of the mechanical parts of the car are still less generally applied by the owner with any degree of regularity or exactness. It is so well known the most important factor in motor preservation is lubrication, that it seems strange more motorists do not take greater care that the correct amount of oil is supplied to the various parts and that all supply pipes and connections are perfectly sound and tight. In motors that are equipped with grease cups it is absolutely necessary to see that they are constantly filled in order to prevent overheated bearings and excessive wear. In the Royal Tourist model M there are no grease cups on the motor and there is no oiling by hand. Provision is made for the determining when the motor has sufficient oil, by opening a plug in the bottom of the crankcase and filling the crankcase only to the point where the oil will run through the pipe.

Particular care should be taken to keep the joints tight in the intake manifold as when loose, the air rushes in unevenly, owing to the jar of the motors and constantly changes the mixture. Before starting the motor, special care should be taken that the wire terminals are held on in a thoroughly workmanlike manner. The magneto should be kept perfectly dry. In the Royal Tourist an aluminum case is furnished for this purpose. The slightest noise in any motor foreign to its usual sound should be investigated at once and the source learned. Drivers should make sure that the compression is equal in all cylinders. The grinding of the exhaust valve will usually remedy the loss of compression or if this fails, the intake valve should be ground and the petcocks and caps should be made especially tight. In the transmission there should be enough oil to permit the gears to dip in it and the transmission case cover should be removed and the bolts which hold the gears to the flange on the shaft should be inspected. Hard grease never should be used in the transmission and any unusual noise should be investigated at once.

The brakes should be kept perfectly adjusted at all times, this being a simple matter on the Royal Tourist as the transmission brake may be adjusted without a tool and without leaving the car. The rear axle gears, to insure long life, must be perfectly adjusted. The axle casing should have a liberal amount of light grease and if the gears then grind they should be readjusted.

All the joints in the steering mechanism should be watched and the front axle clips should be tightened occasionally. By carefully following these suggestions the motor owner should find that the life of his car will be double that of a car of equal merit but which receives less careful attention.—Royal Tourist Car Co., George J. Dunham, president.

INCREASING WHEEL SIZES

Syracuse, N. Y.—Editor Motor Age—A tendency toward an increase in the size of wheels and tires is an accompaniment of the general and growing demand for a motor car of moderately light weight. They mark an increasing appreciation on the part of both maker and owner of the desirability of the quality of easy riding. An obstruction encountered by a large wheel is less of an obstruction than one encountered by a small wheel; it is more easily surmounted; it produces less of a jolt and shakes the passengers less. Just as the road shock produced by any obstruction is magnified as the weight of the car encountering it is increased so is it increased as the wheels are made smaller. People are learning the lesson, which is far from new but which has come to be appreciated only along with actual motoring experience. And they are learning to demand that in touring they be provided with something more than the power that will take them over the road. They have no disposition to be shaken about in a heavy, hard-riding motor car and of being wearied thereby. Touring must be made for them a pleasure; it must provide comfort. In connection with the large wheels the tires have a direct relation to the matter of weight. The over-heavy motor car destroys tires in far greater proportion to its weight than does the car of moderately light weight.—H. H. Franklin Mfg. Co.

ROAD TEST OF CAR

Pontiac, Mich.—Editor Motor Age—Often interesting things are told and wonderful feats are accomplished with motor cars, but "what becomes of them after that?" is a query that was brought about by an incident which happened in connection with the Chicago agency of the company. The twentieth car which was turned out by the Cartercar company was sent to Hagmann & Hammerly, who—like everyone else at that time—were skeptical about the friction drive which is a distinguishing feature of the Cartercar. They therefore drove the car over 800 miles through sticky Illinois mud, it being so thick on the car that the shape was all that was visible. But that was only a beginning. The machine was then put into demonstrating service. It was entered in the Chicago reliability run and took a perfect score in 1906. After covering over 14,000 miles it was again entered in 1907 and took another perfect score. But that wasn't all. After having covered a total of over 23,000 miles it was sold to H. B. Walker, of Chicago. Mr. Walker now states that he drove the machine something like 4,000 miles more last season, mostly in the country.—Cartercar Co.

Among the Makers and Dealers

For Taxicab Service—The Model Automobile Co. has entered into an agreement with its Chicago agents to place Great Western cars in taxicab service in Chicago.

Handling the Rider-Lewis—The Rider-Lewis Motor Car Co. has established agencies with M. E. LeSourd, of Bellefontaine, O., Hazzard & Brocket of Savannah, Ga., and J. W. Dalrymple, of Hackettstown, N. J.

Benz Gets Motor Inn—Walter G. Benz, one of the oldest dealers in Minneapolis, the past week closed a deal with Henry Goosman whereby he takes over Goosman's Motor Inn, one of the newest and most attractive motor buildings in Minneapolis. Benz will continue to handle the Rapid trucks and Moline lines and others that will be announced later.

Austin Plant May Move—It is probable the Austin Motor Co. of Grand Rapids, Mich., will move to Elwood, Ind. S. E. Austin, of the company, has visited Elwood, where he inspected a building that had been suggested as suitable for the company's factory. The company has consented to move to Elwood provided business men of that city will subscribe for $50,000 worth of stock.

Pierce Making Only Sixes—The Pierce-Arrow Motor Car Co. announces that for the coming season it will manufacture nothing but six-cylinder cars. The coming season will be the fourth in which the Pierce-Arrow Motor Car Co. has made six-cylinder cars, although it is the first in which it has confined its output to this class. The first six-cylinder cars of this make were placed on the market in the latter part of 1906. For the coming season the company will make three cars, a 36-horsepower, 48 and 66-horsepower, all of which will be fitted with runabout, miniature tonneau touring and enclosed bodies.

Evans Has Resigned—J. J. Evans announces he has resigned the general sales agency of the motor car department of the Abendroth & Root Mfg. Co., makers of the Frontenac.

More Room Needed—Byrne, Kingston & Co., of Kokomo, Ind., are again building more factories. This time a brick building, 60 by 132 feet, two stories in height, will be put up and devoted to production of Kingston carbureters in addition to other plants now used.

Failed to Buy Plant—Grafton Johnson, of Greenwood, Ind., who put up $25,000 cash for a purchase option of the business and plant of the Kokomo Rubber Co., Kokomo, Ind., failed to come to the front with the required $725,000 additional before the option expired and the rubber company has therefore paid its stockholders a neat extra dividend.

Change in York Control—Announcement is made of a change in the control of the York Motor Car Co., of York, Pa., builder of the Pullman. Thomas C. O'Connor and Oscar Stevenson assume direction of the Pullman interests. The former is a large stockholder in the York Motor Car Co., while the latter has been acting for some time as secretary and treasurer, which offices will be retained by Mr. Stevenson under the new management. It is expected that Mr. O'Connor will be elected president of the company at the annual meeting in the fall. Mr. Stevenson at present is giving his attention to financial matters at the factory, while Mr. O'Connor is arranging his affairs in New York preparatory to assuming personal management of the company's interests.

Riggs Goes West—Frank C. Riggs is retiring from his position as assistant sales manager of the Packard Motor Car Co. with the intention of removing to Portland, Ore., where he will handle the Packard line. Temporarily he will have his headquarters at the Hotel Portland.

Clarkson Succeeds Chalfant—At a meeting of the board of managers of the Association of Licensed Automobile Manufacturers, held last Thursday, the business was principally of a routine character. Coker F. Clarkson was elected as assistant general manager of the association to fill out the term of E. P. Chalfant, who recently resigned as general manager.

Renault Appointments—Paul Lacroix announces he has closed Renault agency contracts with F. A. Bennet for the states of Oregon, Washington and Idaho and with the Colburn Automobile Co., of Denver, for the state of Colorado. The new types of Renaults, Lacroix states, are specially built for American roads, with reinforced axles and springs and high clearance.

Taxicab Interests Consolidated—The Buffalo Taxicab Co. has purchased the good will and all the equipment of the Thomas Taxicab and Transfer Co. and hereafter, all the taxicabs in Buffalo will be operated by the new company. E. R. Thomas still retains a large interest in the company. The Buffalo Taxicab Co. has its headquarters and a fine brick garage at 32 Edward street.

New Grout Deal—The Grout Brothers Automobile Co., of Orange, Mass., is about to change ownership. A new company has been formed under a Massachusetts charter to be known as the Grout Automobile Co., capitalized at $150,000. The officers of the new company are Walter J. Gould, president; George E. Dexter, secretary; E. S. Hall, treasurer. These three men also constitute the board of directors. The receivers of the old company have transferred the plant over to the new company. The plant is well equipped for getting out cars, being one of the first factories of the sort ever built in the country. Work will be started up at once toward building up a business for the coming season. Mr. Hall was one of the receivers of the old company and he carried the business affairs along so that he has had much valuable experience. President Gould was formerly selling agent for the company and he is well equipped to carry out his part. The

NEW BRANCH OPENED BY FIRESTONE COMPANY AT CLEVELAND

legal affairs in connection with the older Mr. Grout's will was settled a few days ago, which had much to do with the present arrangement.

Stein Placing Agencies—Charles Stein, of the Stein Double Cushion Tire Co., Akron, O., is now taking full charge of the pneumatic tire department in the company, and will spend the greater portion of his time placing agencies throughout the country.

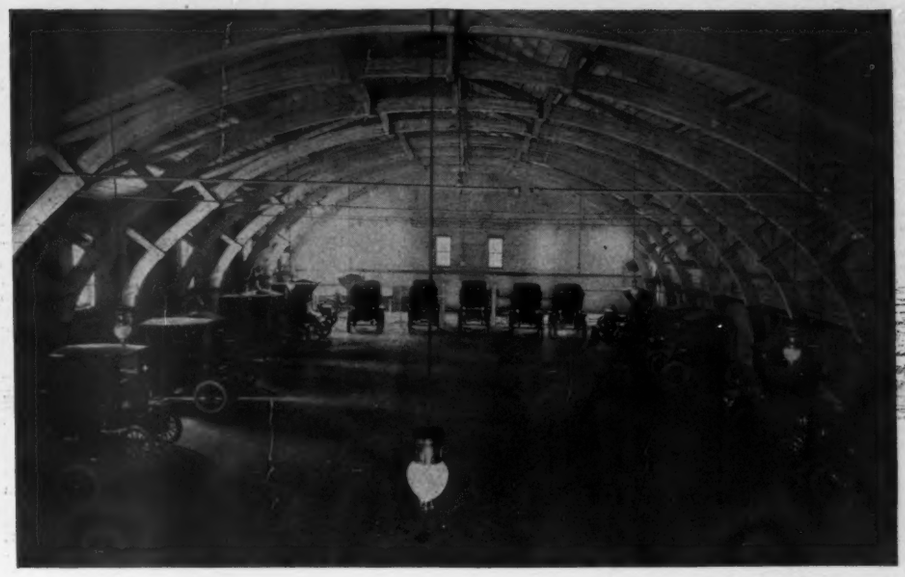
Last 1909 Winton Shipped—The last 1909 Winton six has been sold and shipped from the factory in Cleveland, marking the close of the most successful season in the history of the Winton company. The company's products for 1910 will be announced July 10.

Great Western Agents—The Model Automobile Co. has established the following agencies for Great Western cars: F. A. Reynolds, Omaha, Neb.; C. R. McNown, Wadena, Ind.; C. A. Kenney, Nicholasville, Ky.; John Borcher, Scribner, Neb.; Albert Sterne Motor Car Co., St. Louis, Mo.

Kisselkar Progress—The Kissel Motor Car Co., Hartford, Wis., states that this season's sales have far outstripped its best expectations, compelling it to build new factory buildings and other additional manufacturing space. The selling territory has been greatly expanded, new agencies being easily acquired as fast as the factory was in a position to supply the cars. The Kissel engineers are busy planning the 1910 models.

Denies a Rumor—J. A. P. Ketchum, of Saratoga Springs, N. Y., who is selling Packard cars in Albany, Troy, Schenectady and Saratoga territory, denies the rumor that the Packard company is to open a branch in Albany. Mr. Ketchum reports his business has grown to such an extent he has been forced to purchase the property at the corner of Washington ave. and Northern boulevard in Albany, where he intends erecting a large sales room.

Minneapolis' Electric Service—Minneapolis is now enjoying up-to-date electric garage service, service equal, it is said, to that provided in Chicago and New York. The Minneapolis Battery Co., recently organized, has taken over the old armory building on South Eighth street, which affords floor space for dozens of cars. Complete charging apparatus has been installed and all the way through the equipment has been designed to care for an immense electric business. The entire building, which is 165 by 66 feet, is devoted to the various departments of the new enterprise and is most complete in all its appointments. There are parlors for women; there are suites of apartments for the day and night managers; a large wash room equipped with the latest devices for this work and the largest floor space of any building in the city devoted to the electric garage work. A corps of uniformed attendants is giving excellent satisfaction in calling for and delivering cars. H. H. Martin, local manager of the Columbus Buggy Co., is the prime mover in the new battery company.



ELECTRIC GARAGE OF MINNEAPOLIS BATTERY CO. AT MINNEAPOLIS

Bradley in Two Roles—Although for more than a year George J. Bradley has been manager of the Diamond Rubber Co.'s Detroit establishment, he is still manager of the company's Cleveland branch as well. Division of his time between the two points has led to some confusion.

Mayer Buys an Interest—Controlling interest in the business of the G-L Economizer Co. has been secured by Alf Mayer, who has been associated with the concern for the past year. He has purchased the controlling patents for this country outright. He has established new salesrooms in the Thoroughfare building, at Broadway and Fifty-seventh street, New York.

Shanks Going West—Charles B. Shanks, sales and advertising manager for the F. B. Stearns Co., is to leave Cleveland about August 1 and is to go to Spokane, Wash., where he is going into the real estate business. He is to be associated with F. A. Jacobs, who is the largest realty operator in that section of the country, and the firm is to be known as the Jacobs-Shanks Co.

Artistic Tire Branch—A new Firestone tire branch has been opened at 1918-22 Euclid avenue, Cleveland. Throughout the reception room and salesrooms the architect has adhered to an artistic color scheme of oak finished in verde antique. The front of the store is an expanse of crystal glass, affording an unobstructed view of the interior. The deep show window and the reception room are floored in parquetry, the latter further adorned by oriental rugs of rich shading and furnished with chairs and tables conforming to mission style with a leaning toward the Darmstadt school of design. A wainscoting of panelled oak extends around the rooms, above which the walls are stained a deep sepia. Verde antique brass is the scheme of the electric fixtures, whose lamps are encased in opalescent cathedral glass, shedding a soft, diffused radiancy.

Winton Convention Called—Sales Manager Churchill has called a convention of Winton branch managers and road men to be held at the Winton factory in Cleveland during the week of June 28. Plans for the 1910 campaign will be fully discussed and, incidentally, a program of entertainment will be carried out.

Buys a New Plant—The Elkhart Motor Car Co., at a meeting of the directors held last week, decided to purchase of the Sterling-Hudson Co. a factory building it recently erected, and to remodel it into a motor car factory to accommodate its increasing business. It was stated that the Elkhart company expects to increase its output to 1,000 cars a year and employ 400 men.

Lexington Agencies—The Lexington Motor Car Co., of Lexington, Ky., recently has made contracts with the Haynes Auto Co., Minneapolis, for handling its line in the northwest, with the Nock Auto Co., of Providence, for New England territory, with the Collins Auto Co., of San Antonio, Tex., for San Antonio, and with Haughton & Bell, Richmond, Ind., for Indiana territory.

Cadillac Making War Car—The Cadillac Motor Car Co. is just completing the manufacture of a war car, designed for use in maneuvers as a test to counter balance the effect of aeroplanes or balloons. The machine is being finished in battleship gray and a rapid-fire gun, capable of being aimed in any direction, including nearly vertical, is being mounted on the carriage. The machine is being built for the Northwestern military academy, which is located at Highland Park, Ill., near Chicago. It has a demi-tonneau body and will sea four persons.

Hermann Cuntz Reviews Transportation

EDITOR'S NOTE—The following lecture was delivered before the Institute of Arts and Sciences, at Brooklyn, N. Y., by Hermann F. Cuntz, M. E.

IN 1896 it was possible to travel by railroad about the United States, and in the course of 10 days visit practically every place where motor cars were being made and see practically all motor cars that were then in use. Today there are factories on the Pacific coast and Atlantic coast, and in some of the middle states there is hardly a town of 25,000 population in which there is not a factory or some manufacture on a small scale of either gasoline, electric or steam vehicles. In 1898 there were not many more than 200 cars actually made and put into use in the United States. In the year 1909 the total new cars being made and sold approximated 82,000. Several hundred thousand workmen are employed in the factories where complete motor cars are made or parts for them, or where sundries or accessories are made, used in the care and operation of vehicles.

The motor car is a marvelous piece of mechanism, and when you consider that not 30 years ago prime movers weighed as much as 800 pounds or 1,000 pounds for each horsepower developed and the modern motor car engine of relatively high power has been reduced in cases to 3 or 4 pounds for each horsepower developed, and consider also that motor engines have been run continuously for 36 hours —the perfection of material, workmanship and design might in a sense be said to have reached the last word. Still, this perfection of engine construction has been only in keeping with the perfection of other details of the vehicle, and this refinement has actually come with the commercialization in the last 8 years.

Unfortunately a motor car accident is the only information which reaches the ears of many. An actual compilation of such accidents, however, shows them to be a very small factor. In 1907 there were accidents on railroads in the United States to 111,000 people, and over 10 per cent. were fatalities. Still the railroad is now considered an essential part of any civilized country's organization. The use of small power units, as is the motor car, brings it on roads and streets where a large proportion of the population are unaccustomed to it and are unrestrained as to their relative rights.

First and foremost consider that to be an advantage a new mode of transportation must either transport freight or merchandise at a lower cost than previous methods, or it must transport persons more quickly or at less cost. In considering this the cost of transportation from the origin to the final destination is most important. Consider, for example, that freight is to be carried from a wholesale house in a city to a retail store in a suburb 20 miles distant. The old method would involve expressing or carting to a railroad station, then transportation by rail to another station, and there trucking would add further cost and time to the movement. A motor truck takes its freight from the wholesale store directly to the retail store, and if one road is blocked it takes it by another road. A tie-up on a railroad, forming only a small link in the former method of transportation, may entirely prevent its delivery for days.

The same applies to passenger transportation for short distances; but another factor enters in personal use. Instead of the beaten tracks by rail, smothered in dust in warm weather, a motor car transports the members of the family direct from a city abode, with all the minor equipment, through an open, pleasing country side, never before seen, and lands them at the door-step of their country home. It is impossible to figure all the incidental expenses, direct and indirect, which, balanced, favor the motor car. The factor of comfort and convenience cannot well be measured in dollars and cents.

One hundred years ago horses were the only means of travel. A horse may carry you 8 to 12 miles an hour in ordinary daily use and for usual purposes transporting passengers 30 to 40 miles a day was and is good going. Pony post and special stage coach lines, of course, exceed these figures, but if speed is in question, consider only the best figures of a running horse and the fastest mile made was at the rate of about 37 miles an hour. A 4-mile running-horse record stands at a speed of about 33 miles an hour. Years ago a trotting horse made a record for 100 miles, but the average speed was only a little over 11 miles an hour.

The railroad was a novelty less than 100 years ago. In fact, the first demonstration consisted of a circular track near London, where locomotive and train were exhibited, and admission charged to see the wheels go round. Eighty years of development of the locomotive has given us a train which has made 960 miles at an average speed of 60 miles an hour. The best record of locomotive and train, for a 5 minutes' run, is at a speed of 120 miles an hour. These locomotives now exceed 100 tons in weight.

After only *10 years* of development of the motor car we have a small-wheeled structure, with self-contained power and control, which has traversed the ground for 1 minute at a speed of 127½ miles an hour. Motor cars have made a continuous run of 100 miles at a speed of 79 miles an hour. Motor cars have run continuously for 24 hours at a speed in excess of 49 miles an hour. Consider also that motor cars have been run 36 hours with their engines constantly going. It is a simple matter for a motor car to carry sufficient fuel to run 250 or 300 miles without a stop for anything. In comparison, consider that locomotives may run 50 miles, though usually less, and then must replenish with water. A comparison recently made in the operation of one of the well-known motor cars, of which there are thousands in use, showed that the weight of fuel and supplies for its operation was a little over 5 per cent. of the total weight. On the other hand, an oil-burning locomotive of a most modern type required fuel and supplies to the extent of over 15 per cent. of its weight.

To complete the comparison of different means of locomotion it is well to consider that the bicycle, which at first was a luxury, has come into its place of general utility. The motor car, which only a few years ago could be used by a few, is now in a large proportion used either for direct gain, as the taxicab, or the freight truck and delivery wagons, or indirect gain for private purposes.

Similarly as we see the flying machine, balloons, airships and aeroplanes as pure experiments today, their use will find its special field without a doubt and within a very few years. As the locomotion on water has required no special roads, so the air craft has its medium provided by nature. Undoubtedly the speeds of air craft will exceed that of land craft, just as the latter has exceeded the speeds of water craft, and from the nature of the medium on which they travel, the inverse ratio exists as to weight, the ships being the heavier with greater carrying capacity, road power vehicles much lighter, and swift aeroplanes the lightest. The motor car has now excelled in speed and radius of operation and lasting qualities at high speeds, all bodies moving on land, both animate and inanimate, but the air craft has a contest in store. Thousands of homing pigeons have been trained and contests for years held, to determine their speed and lasting qualities. The winners of these contests have been known to average 51 miles an hour in flights of several hundred miles. But recently an experiment was made in France and Holland by training a swallow and pitting it against the homing pigeon, with the result that a speed of 127 miles an hour is claimed for the swallow in something like 1½ hours' flight.

Realize that the number of motor cars to be produced and put in use this year approximates 82,000. The horsepower of which they are capable will average about 20. Therefore, these innumerable small units are being produced this year of an aggregate power of over 1,600,000 horse. At the beginning of this year there were in use in the United States over 184,000 motor cars capable of generating close to 4,000,000 horsepower! The harnessing of the power at Niagara Falls to the extent of a few hundred thousand horsepower was hailed as a stupendous undertaking.

The common roads of the country will of necessity be the arteries of swift passenger and freight transportation. Considering the passengers carried by railroads in 1908 and the number of miles carried, as compared with the number of people carried per mile by motor cars, and we find that motor car passenger miles at present would approximate 0.7 of 1 per cent. If, however, we consider the rate at which railroad construction is increasing and its traffic and the increasing use of the motor car conservatively estimated, this proportion will materially change by 1915, and estimates indicate that the passenger miles transported by car will then be not less than 7 per cent. of the passenger miles of railroad. The time has not yet come when a similar comparison can be made with respect to the amount of large freight transported, and in fact the railroad it is generally believed must maintain this class of traffic as its just lot. The small freight transportation for short distances will be the lot of the motor car and will gradually supplant the horse vehicle, as it is now proven in numerous cases to be less expensive and vastly more convenient. In cities there are some highways, but most streets are only air and sunlight wells with their bottom paved, and therefore come in for different consideration. From a hygienic standpoint, municipalities are awakening to the advantage of the motor car, and it may not be amiss to mention that as early as 1896 the town of Cannstadt, Germany, looked upon as the birthplace in Germany of its car industry, considered seriously the exclusion of the horse from the central part of the city. An ordinance to that effect was considered—13 years ago.

The 100-ton locomotive and its trailers cannot move a foot without a specially prepared road, and when prepared it leads only to predetermined points. A motor car starts anywhere and goes anywhere. They use the highways that they find, and the marvel of it is that they have been able to negotiate at all the common roads existing in the wilds of the country.

Recently compiled statistics show that 1.8 per cent of the farmers of the United States own motor cars. With the increase of the past few years it is evident 10 to 15 per cent. of the farmers of the country will own motor cars before 10 years have elapsed. One of our worthy senators recently announced on the floor of the senate that it had been found economical to use motor cars on ranches to round up stray horses Far western mining towns have regular inter-communication for carrying freight and passengers by motor car.

The sentiment is growing, and soon there will be a universal recognition that every mile of common road in this country should be made suitable for rapid and economical transportation. Every town in the country must be reached by a suitable road. Five thousand dollars a mile, or its equivalent in labor and material, would be required, and this means that the roads will be in suitable condition only in 50 years should the equivalent of 200 million be expended annually. This seems a large sum, but consider that 5 million a year by each state would accomplish the result. Divided as to population, it will be seen that there is not a state in the Union which cannot well afford to spend its proportionate amount to make possible road travel in the now accepted form possible to every village and hamlet within her boundaries. The aggregate so spent would prove warranted when we consider the saving to the farmer and others interested in transportation of articles. It is hard to measure in dollars and cents the advantage gained, but the fact that one and all quickly substitute the use of motor cars where good roads are available, is proof positive that they are the gainers, whether or not they will admit it.

The railroads of the country have spent, as charged to cost of railway equipment, over 13 billion dollars. This has practically all been within the last 40 years. It is true that the national and state governments would not receive in direct payments, as for freight and passenger transportation, earnings such as have prompted the private investment of this vast aggregate sum. But the indirect gain to the community at large, by every citizen, will be a reality so appreciated and eventually to be estimated in tangible form, that it is futile to gainsay the fact that an expenditure on the highways of the country in the next 40 years, equal to the private outlay on railroads in the past 40, would be anything more than warranted, reasonable and wise.

When 2,000 new cars are shipped to one state, as Iowa, in 1 year, and when we consider that motor cars in the last 10 years have been purchased at an aggregate value of over 370 million dollars, is it not ample to prove that the state and national government should build or remodel highways even though it be at an expense of 2 or 300 million a year, until all the roads are suited to the new mode of transportation?

If more detailed information to prove the benefits at large is necessary, I need only cite that in a recent year when manufacturers of motor cars received an aggregate of 90 million for product shipped from their factories, there was, owing to the use of motor cars throughout the country, such a stimulation of activity and industry in every direction that it represented a circulation of money in the United States of not less than 467 million, or more than five times the cost of new cars. With the increasing number of cars in operation, it is fair to consider that the circulation of money, owing to the introduction and practice of the new means of locomotion, by the end of this year, will represent ten times the cost of new motor cars. What this circulation of money represents, however, tells the story. in the first place, hundreds of thousands of skilled workmen are employed, year in year out, at good wages. Real estate, formerly undesirable, has found a market, has been bettered and the real estate business improved. Towns and even inns lying remote from centres of population have revived and done a thriving business, whereas 10 years ago they were deserted and their owners had no hopes for the future. Branches of insurance have been specially established and developed, garden truck and farm products which before cost too much to haul to market, have become a paying proposition. The steel business has developed special lines. Raw material, such as wood, rubber, bronze, aluminum, copper and leather and a long list have shared in the make-up of the industry, and their cost of production and working has given employment to tens of thousands.